SHARP SERVICE MANUAL

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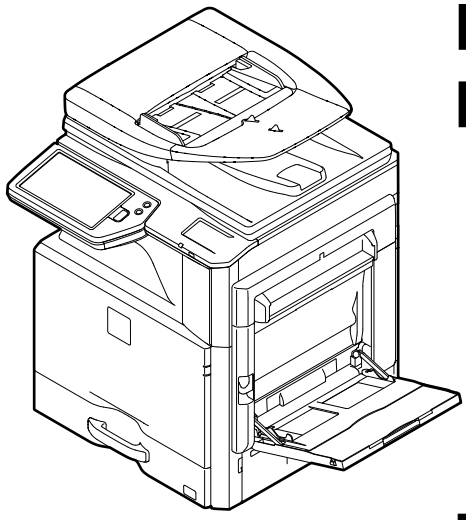

DIGITAL FULL COLOR MULTIFUNCTIONAL SYSTEM

MX-1810U/2010U
MX-2310U/3111U
MX-2610N/3110N

MODEL MX-3610N

CONTENTS

NOTE FOR SERVICING
[1] PRODUCT OUTLINE 1-1
[2] CONSUMABLE PARTS 2-1
[3] EXTERNAL VIEW AND INTERNAL STRUCTURE 3-1
[4] ADJUSTMENTS AND SETTINGS 4-1
[5] SIMULATION 5-1
[6] TROUBLESHOOTING 6-1
[7] FIRMWARE UPDATE 7-1
[8] MAINTENANCE 8-1
[9] DISASSEMBLY AND ASSEMBLY 9-1
[10] VARIOUS STORAGE DATA HANDLING 10-1
[11] SERVICE WEB PAGE 11-1
[12] OPERATIONAL DESCRIPTIONS 12-1
[13] ELECTRICAL SECTION 13-1
[14] SPECIFICATIONS 14-1
[15] TOOL LIST 15-1

Parts marked with "⚠" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

SHARP CORPORATION

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The contents are subject to change without notice.

CONTENTS

NOTE FOR SERVICING

1. Precautions for servicing i
2. Warning for servicing i
3. Note for installing site i
4. Note for handling PWB and electronic parts ii
5. Note for repairing/replacing the LSU iii
6. Note for handling the drum unit, the transfer unit, the developing unit iii
7. Screw tightening torque iii

[1] PRODUCT OUTLINE

1. System diagram 1-1
2. Option list 1-5

[2] CONSUMABLE PARTS

1. Supply system table 2-1
2. Maintenance parts list 2-7
3. Definition of developer/drum life end 2-19
4. Production number identification 2-21
5. Environmental conditions 2-21

[3] EXTERNAL VIEW AND INTERNAL STRUCTURE

1. External view 3-1
2. Internal structure 3-4
3. I/F connectors 3-5
4. Operation panel 3-6
5. Sensors and detectors 3-8
6. Switches 3-13
7. Clutches and solenoids 3-15
8. Motors 3-18
9. Rollers 3-21
10. Lamps 3-26
11. Fans and filter 3-29
12. Gates 3-31
13. Heater 3-33
14. PWB/Memory device 3-34
15. Fuses and Thermostats 3-40
16. Lock 3-43

[4] ADJUSTMENTS AND SETTINGS

1. General 4-1
2. Adjustment item list 4-1
3. Details of adjustment 4-3

[5] SIMULATION

1. General and purpose 5-1
2. Starting the simulation 5-1
3. List of simulation codes 5-4
4. Details of simulation 5-10

[6] TROUBLESHOOTING

1. Error code and troubleshooting 6-1
2. JAM and troubleshooting 6-38
3. Image send communication report code 6-49
4. Dial tone 6-53

[7] FIRMWARE UPDATE

1. Outline 7-1
2. Update procedure 7-1

[8] MAINTENANCE

1. Works necessary when executing the maintenance 8-1
2. Display of maintenance execution timing 8-2
3. Maintenance list 8-4

[9] DISASSEMBLY AND ASSEMBLY

1. Disassembly of Units 9-1
2. Disassembly and assembly of each unit 9-24

[10] VARIOUS STORAGE DATA HANDLING

1. HDD/SD card memory map 10-1
2. Necessary steps when replacing the PWB, HDD and the SD Card 10-6
3. HDD/SD card SIM format operation 10-12
4. Necessary works and notes for replacement of the mirroring kit HDD 10-14
5. Note for installing and repairing the mirroring kit . . . 10-17

[11] SERVICE WEB PAGE

1. General 11-1
2. Details and operation procedures 11-1

[12] OPERATIONAL DESCRIPTIONS

1. Operation panel section 12-1
2. Scanner section 12-6
3. Manual paper feed section 12-8
4. Tray paper feed section 12-13
5. Paper registration section (Paper transport section) 12-19
6. Paper exit section 12-23
7. ADU section 12-29
8. LSU section 12-34
9. Process section 12-41
10. Fusing section 12-79
11. RSPF section 12-90
12. Fan and filter 12-96
13. Operations and specifications of counters 12-97

[13] ELECTRICAL SECTION

1. Block diagram 13-1
2. Power line diagram 13-26
3. Actual wiring chart 13-32
4. Signal list 13-68

[14] SPECIFICATIONS

1. 18cpm/20cpm machine 14-1
2. 23cpm/31cpm(G) machine 14-10
3. 26cpm/36cpm/31cpm(A) machine 14-19
4. List of parts included in the package of developer 14-30

[15] TOOL LIST 15-1

Symbols in this manual

The lists of symbols used in this manual are shown below.
The meaning of each symbol described in the table must be understood for proper servicing.

1. Symbols used for notes and cautions

Symbol	Meaning	
	CAUTION	Indicates a general caution item.
	HIGH TEMP	Be careful of a high temperature in the fusing section.
	HIGH VOLTAGE	Be careful of an electric shock where a high voltage is applied such as the high voltage PWB, the main charger, and the process section.
	DANGER	Indicates danger.
	HANDLE WITH CARE	Indicates a part which requires special care for handling such as the HDD, and the LSU.
	INHIBIT	Indicates inhibit.
	NO ELECTROSTATIC CHARGE	Be careful to keep away from static electricity. (PWB's and electric parts)
	NO DUST, FINGER PRINT, DIRT, SCRATCH	Be careful not to touch directly, such as the optical section, the photoconductor, and the DV roller. Also be careful not to scratch.
	NO SCRATCH	
	NO LIGHT	Be careful not to expose to light, such as the photoconductor, and the test chart.
	NO SOLVENT	Be careful not to use a solvent in cleaning, etc.
	NO DISASSEMLE	Do not disassemble. Not serviceable. Example CCD unit.

Symbol	Meaning	
	OK/GOOD	Indicates a correct procedure or result in an adjustment, etc.
	NO GOOD	Indicates a wrong procedure or result in an adjustment, etc.
	NOTE	Indicates a note.
	IMPORTANT	Indicates an important item.
	REFER	Indicates a reference page, etc.
	NEW	Indicates a new technology, a new method, or a new item.
	EXAMPLE	Indicates a description using an example.

2. Symbols used in the work contents

Symbol	Meaning (Work content)	
	Adhesion	Indicates that a seal, etc. is attached.
	Adjustment	Indicates an adjustment.
	Measure a dimension or a size.	Indicates that a dimension or a length is measured.
	Apply grease	Indicates that grease is to be applied.
	Apply conductive grease	Indicates conductive grease is applied
	Cleaning (Dry)	Indicates clean with a dry cloth.
	Cleaning (Wet)	Indicates clean with a cloth dampened with water.
	Cleaning (Alcohol)	Indicates clean with alcohol.
	Cleaning (Blower)	Indicates cleaning is done with a blower/ brush.

Symbol	Meaning (Work content)	
	Cleaning (Vacuum)	Indicates that cleaning is performed with a vacuum cleaner.
	Cleaning (Brush)	Indicates that cleaning is performed with a brush.
	Oil	Indicates that oil is applied to lubricate.
	Apply powder.	Indicates that setting power is applied to the photoconductor drum, the transfer belt, etc.
	Replace	Indicates that a part is replaced.
	Check	Indicates that a check (replacement, adjustment, cleaning) is performed.
	Cut	Indicates that cutting is performed.
	Loosen	Indicates that a screw is loosened.
	Connect	Indicates that a connector is connected.
	Disconnect	Indicates that a connector is disconnected.
	Remove a harness.	Indicates that a harness is unsecured.
	Attach a harness.	Indicates that a harness is secured.
	Remove a clamp.	
	Attach a clamp.	
	Release a hook.	Indicates that a hook is released.
	Fix a hook.	Indicates that a hook is fixed.
	Disengage the pawl.	

Symbol	Meaning (Work content)	
	Engage the pawl.	
	Screw lock	Indicates that a screw is secured with adhesive.
	Unlock	
	Turn OFF the power.	
	Disconnect the power plug.	

3. Symbols used for kinds of parts

Symbol	Meaning (Kinds of parts)	
	Maintenance part	Indicates a part which is replaced in a maintenance procedure.
CP	Consumable part	Indicates a consumable part such as a photoconductor, developer, a transfer belt, etc.
WP	Waste part	Indicates a waste part which is consumed but excluded from the above consumable parts. (A roller, a seal, etc.)
UN	Unit part	Indicates a part which is designated as a unit.
	Included part	Indicates a part which is included in the package

4. Symbols used for additional descriptions

Symbol	Meaning	
TOP VIEW	View from the top	Indicates from which angle the drawing is viewed.
BOTTOM VIEW	View from the bottom	
FRONT VIEW	View from the front	
REAR VIEW	View from the back	

NOTE FOR SERVICING

1. Precautions for servicing

- When servicing, disconnect the power plug, the printer cable, the network cable, and the telephone line from the machine, except when performing the communication test, etc.

  It may cause an injury or an electric shock.
- There is a high temperature area inside the machine. Use extreme care when servicing.

  It may cause a burn.
- There is a high voltage section inside the machine which may cause an electric shock. Be careful when servicing.
- Do not disassemble the laser unit. Do not insert a reflective material such as a screwdriver in the laser beam path.

  It may damage eyes by reflection of laser beams.
- When servicing with the machine operating, be careful not to squeeze you hands by the chain, the belt, the gear, and other driving sections.
- Do not leave the machine with the cabinet disassembled.

  Do not allow any person other than a serviceman to touch inside the machine. It may cause an electric shock, a burn, or an injury.
- When servicing, do not breathe toner, developer, and ink excessively. Do not get them in the eyes.

  If toner, developer, or ink enters your eyes, wash it away with water immediately, and consult a doctor if necessary.
- The machine has got sharp edges inside. Be careful not to damage fingers when servicing.
- Do not throw toner or a toner cartridge in a fire. Otherwise, toner may ignite and burn you.
- When replacing a lithium battery on a PWB, only use the specified replacement battery.

  If a battery of different specification is used, it may cause a machine malfunction or breakdown.
- When carrying a unit with PWB or electronic parts installed to it, be sure to put it in an anti-static-electricity bag.

  It may otherwise cause a machine breakdown or malfunction.

CAUTION
DOUBLE POLE/NEUTRAL FUSING

(200V series only)

2. Warning for servicing

- Be sure to connect the power cord only to a power outlet that meets the specified voltage and current requirements.

  Avoid complex wiring, which may lead to a fire or an electric shock.

  It may cause a fire or an electric shock.
- If there is any abnormality such as a smoke or an abnormal smell, interrupt the job and disconnect the power plug.

  It may cause a fire or an electric shock.
- Be sure to connect the grounding wire. If an electric leakage occurs without grounding, a fire or an electric shock may result.

  To protect the machine and the power unit from lightening, grounding must be made.
- When connecting the grounding wire, never connect it to the following points.
  - Gas tube
  - Lightning conductor
  - A water pipe or a water faucet, which is not recognized as a grounding object by the authorities.
  - Grounding wire for telephone line

  It may cause an explosion, a fire or an electric shock.
- Do not damage, break, or stress the power cord.

  Do not put heavy objects on the power cable. Do not stress, forcibly bend, or pull the power cord.

  It may cause a fire or an electric shock.
- Keep the power cable away from a heat source.

  Do not insert the power plug with dust on it into a power outlet.

  It may cause a fire or an electric shock.
- Do not place liquids or foreign metallic objects inside the machine.

  It may cause a fire or an electric shock.
- Do not touch the power cord, insert the phone jack, operate the machine, or perform service on the machine with wet or oily hands.

  It may cause an electric shock.

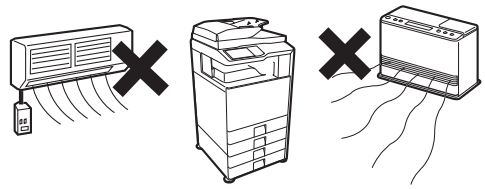
3. Note for installing site

Do not install the machine at the following sites.

- **Place of high temperature, high humidity, low temperature, low humidity, place under an extreme change in temperature and humidity.**

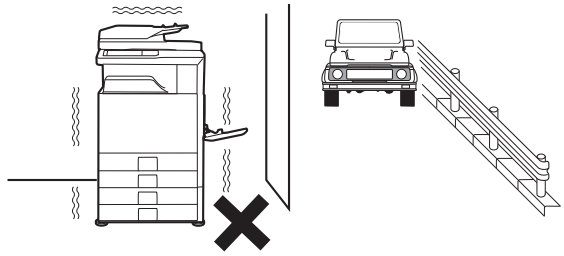
  Paper may get damp and form condensation inside the machine, causing paper jam or copy dirt.

  For operating and storing conditions, refer to the specifications described later.



- **Place of extreme vibrations**

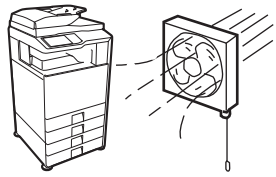
  It may cause a breakdown.



- **Poorly ventilated place**

  An electrostatic type copier will produce ozone.

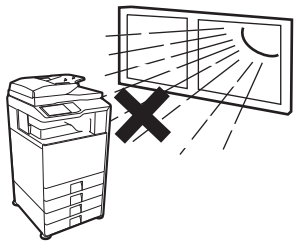
  The quantity of ozone produced is designed to a low level so as not to affect human bodies. However, continuous use of such a machine may produce an ozone smell. Install the machine in a well ventilated place.



- **Place of direct sunlight.**

  Plastic parts and ink may be deformed, discolored, or may undergo qualitative change.

  It may cause a breakdown or output quality problems.



- **Place which is full of organic gases such as ammonium**

  The organic photo-conductor (OPC) drum used in the machine may undergo qualitative change due to organic gases such as ammonium.

  Installation of this machine near a diazo-type copier and blue print machine may result in poor quality output.

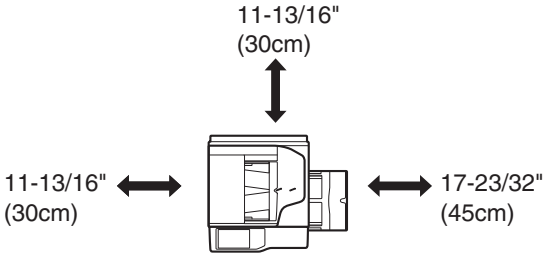
- **Place of much dust**

  When dust or contaminants enters the machine, it may cause a breakdown or poor quality output.

- **Place near a wall**

  The machine will require ventilation.

  If ventilation is not proper, poor output or machine failure may result.



- **Unstable or irregular surface**

  If the machine is dropped or tips over, it may cause injury or machine malfunction.

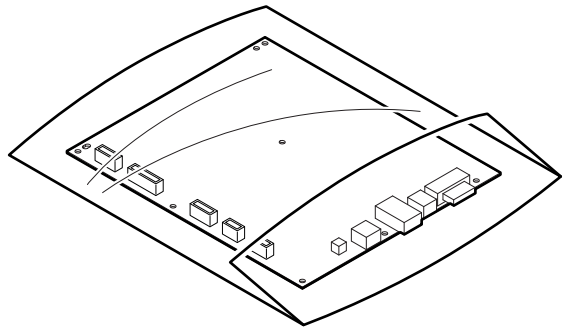
  Use an optional desk or an exclusive-use desk.

  When using the optional desk, be sure to fix the adjuster and lock the casters.

4. Note for handling PWB and electronic parts

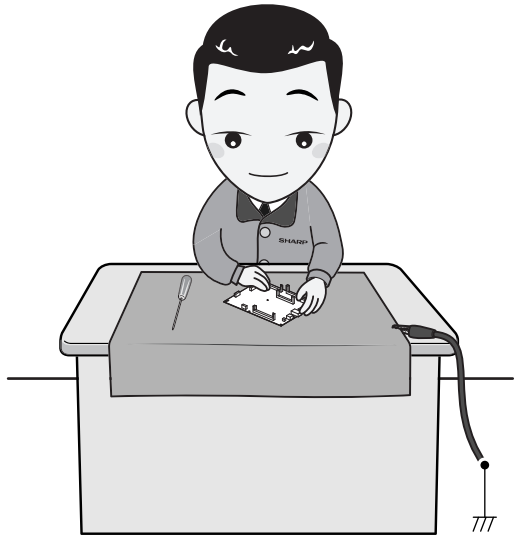
When handling the PWB and the electronic parts, be sure to observe the following precautions in order to prevent against damage by static electricity.

- When in transit or storing, put the parts in an anti-static bag or an anti-static case and do not touch them with bare hands.



- When and after removing the parts from an anti-static bag (case), use an earth band as shown below:
  - Put an earth band to your arm, and connect it to the machine.

- When repairing or replacing an electronic part, perform the procedure on an anti-static mat.



5. Note for repairing/replacing the LSU

When repairing or replacing, be sure to observe the following items.

- When repairing or replacing the LSU, be sure to disconnect the power plug from the power outlet.
- When repairing or replacing the LSU, follow the procedures described in this Service Manual.
- When checking the operations after repairing the LSU, keep all the parts including the cover installed and perform the operation check.
- Do not modify the LSU.
- When visually checking the inside of the machine for the operation check, be careful not to allow laser beams to enter the eyes.

If the above precaution is neglected or the LSU is modified, ones safety may be at risk.

6. Note for handling the drum unit, the transfer unit, the developing unit

When handling the OPC drum unit, the transfer unit, and the developing unit, strictly observe the following items.

If these items are neglected, a trouble may be generated in the copy and print image quality.

Drum unit

- Avoid working at a place with strong lights.
- Do not expose the OPC drum to lights including interior lights for a long time.
- When the OPC drum is removed from the machine, cover it with light blocking material. (When using paper, use about 10 sheets of paper to cover it.)
- Be careful not to attach fingerprints, oil, grease, or other foreign material on the OPC drum surface.

Transfer unit

- Be careful not to leave fingerprints, oil, grease, or other foreign material on the transfer roller, primary transfer belt, and the secondary transfer belt.

Developing unit

- Be careful not to leave fingerprints, oil, grease, or other foreign material on the developing unit.

7. Screw tightening torque

The screws used in this machine are largely classified into three types.

These types are classified according to the shape of the screw grooves and use positions.

The table below shows the types of the screws and the tightening torques depending on the use position.

When tightening the screws for repair or maintenance, refer to the table.

However, for the other conditions of tightening screws than specified on this table, or under special circumstances, the details are described on the separate page. Refer to the descriptions on such an exception.

Important

Especially for the screw fixing positions where there is an electrode or a current flows, use enough care to tighten securely to avoid loosening.

Screw kinds and tightening torques

Normal screws, set screws (including step screws)

Screw diameter	Material to be fixed	Tightening torque (N·m)	Tightening torque (kgf·cm)	Tightening torque (lbft)
M2.6	Steel plate	0.8 - 1.0	8 - 10	0.6 - 0.7
M3	Steel plate	1.0 - 1.2	10 - 12	0.7 - 0.9
M4	Steel plate	1.6 - 1.8	16 - 18	1.2 - 1.3

Tapping screws (for iron)

Screw diameter	Material to be fixed	Tightening torque (N·m)	Tightening torque (kgf·cm)	Tightening torque (lbft)
M3	Steel plate (Plate thickness 0.8mm or above)	1.0 - 1.2	10 - 12	0.7 - 0.9
M4	Steel plate (Plate thickness 0.8mm or above)	1.6 - 1.8	16 - 18	1.2 - 1.3
M3	Steel plate (Plate thickness less than 0.8mm)	0.6 - 0.8	6 - 8	0.4 - 0.6
M4	Steel plate (Plate thickness less than 0.8mm)	1.2 - 1.4	12 - 14	0.9 - 1.0

Tapping screw (for plastic)

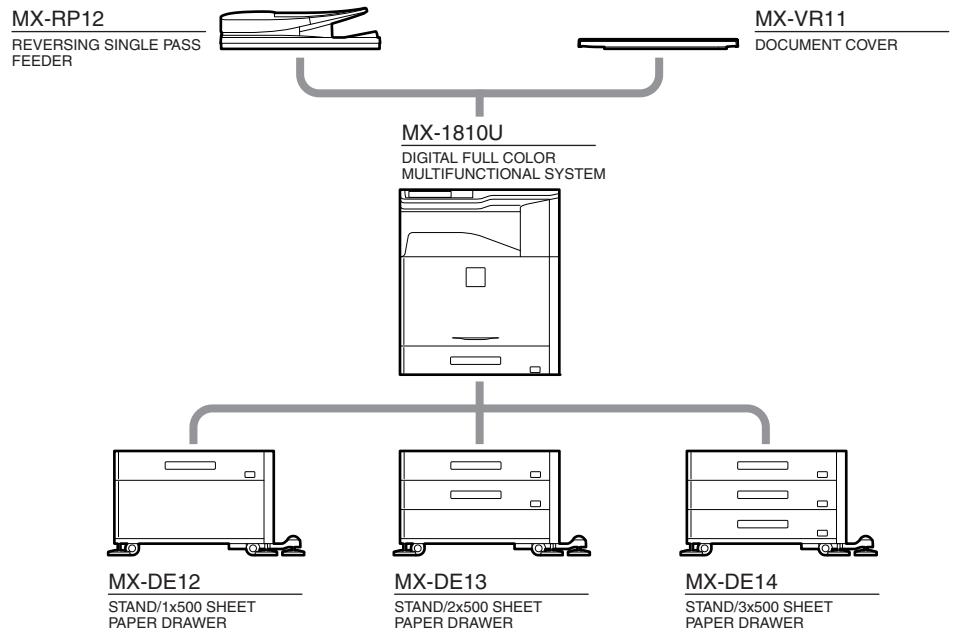
Screw diameter	Material to be fixed	Tightening torque (N·m)	Tightening torque (kgf·cm)	Tightening torque (lbft)
M3	Plastic resin	0.6 - 0.8	6 - 8	0.4 - 0.6
M4	Plastic resin	1.0 - 1.2	10 - 12	0.7 - 0.9

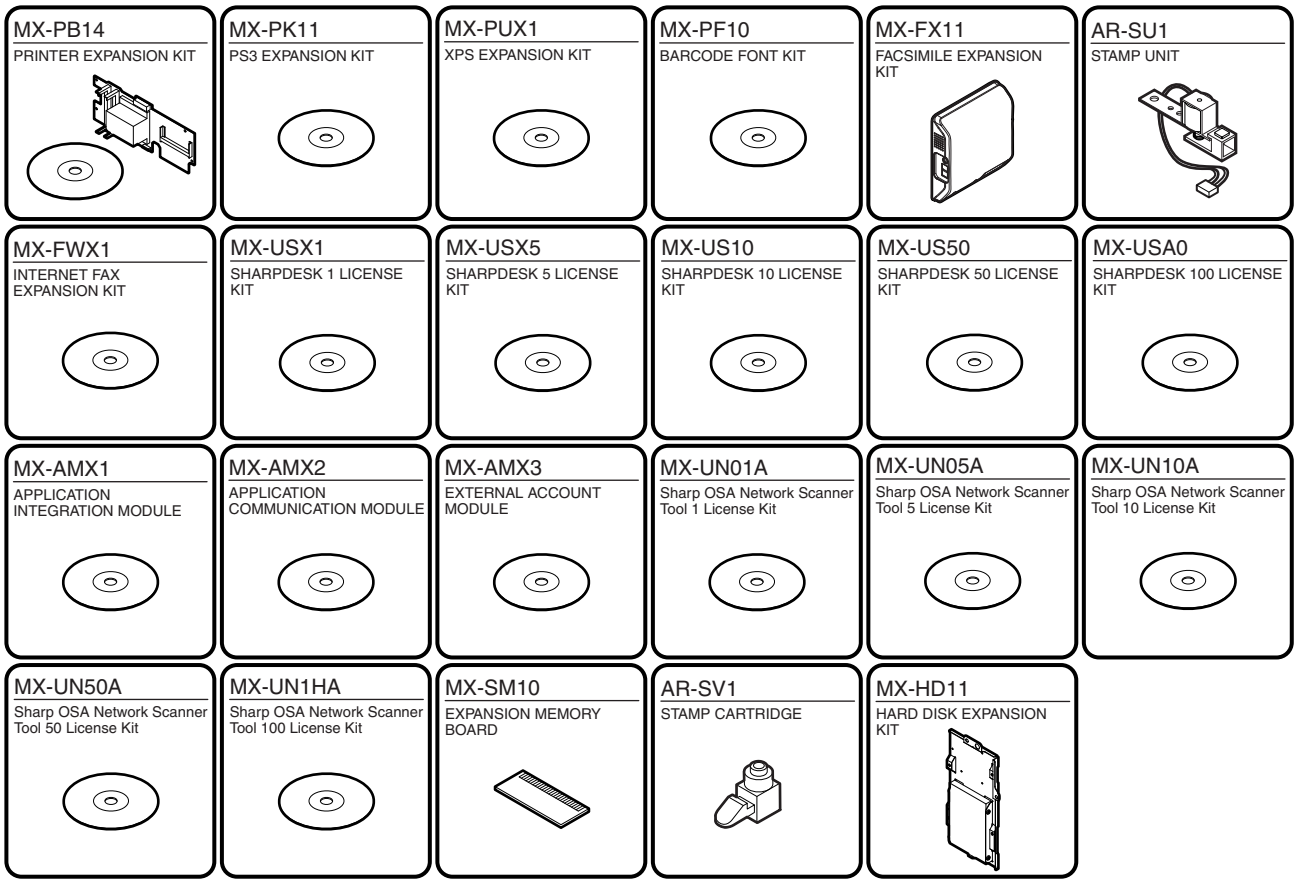
Name in the manual	Model name
18cpm machine	MX-1810U
20cpm machine	MX-2010U
23cpm machine	MX-2310U
26cpm machine	MX-2610N
31cpm(G) machine	MX-3111U
31cpm(A) machine	MX-3110N
31cpm machine	MX-3111U/MX-3110N
36cpm machine	MX-3610N

[1] PRODUCT OUTLINE

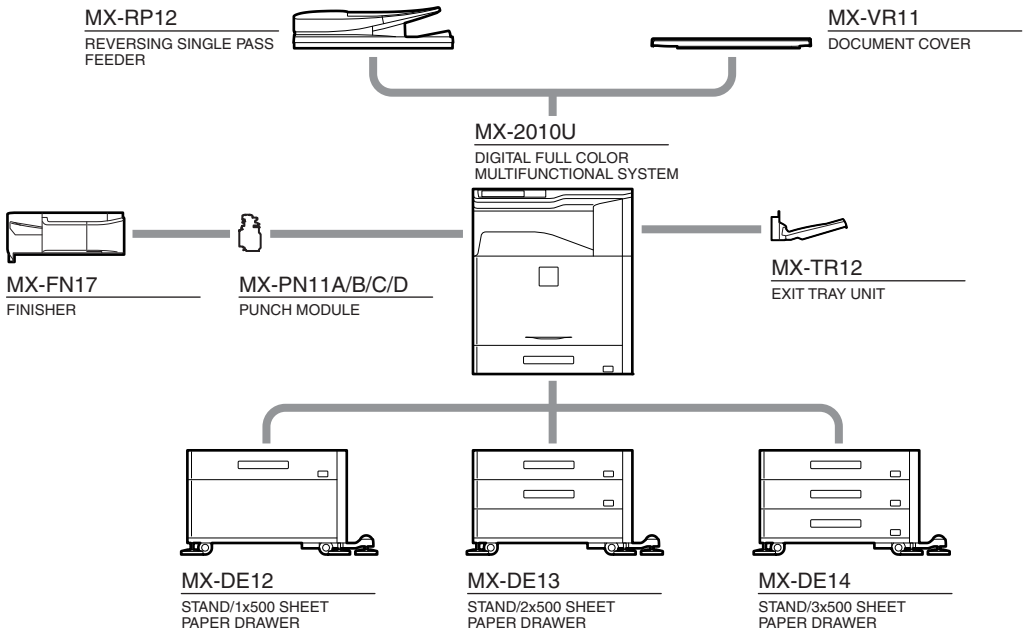
1. System diagram

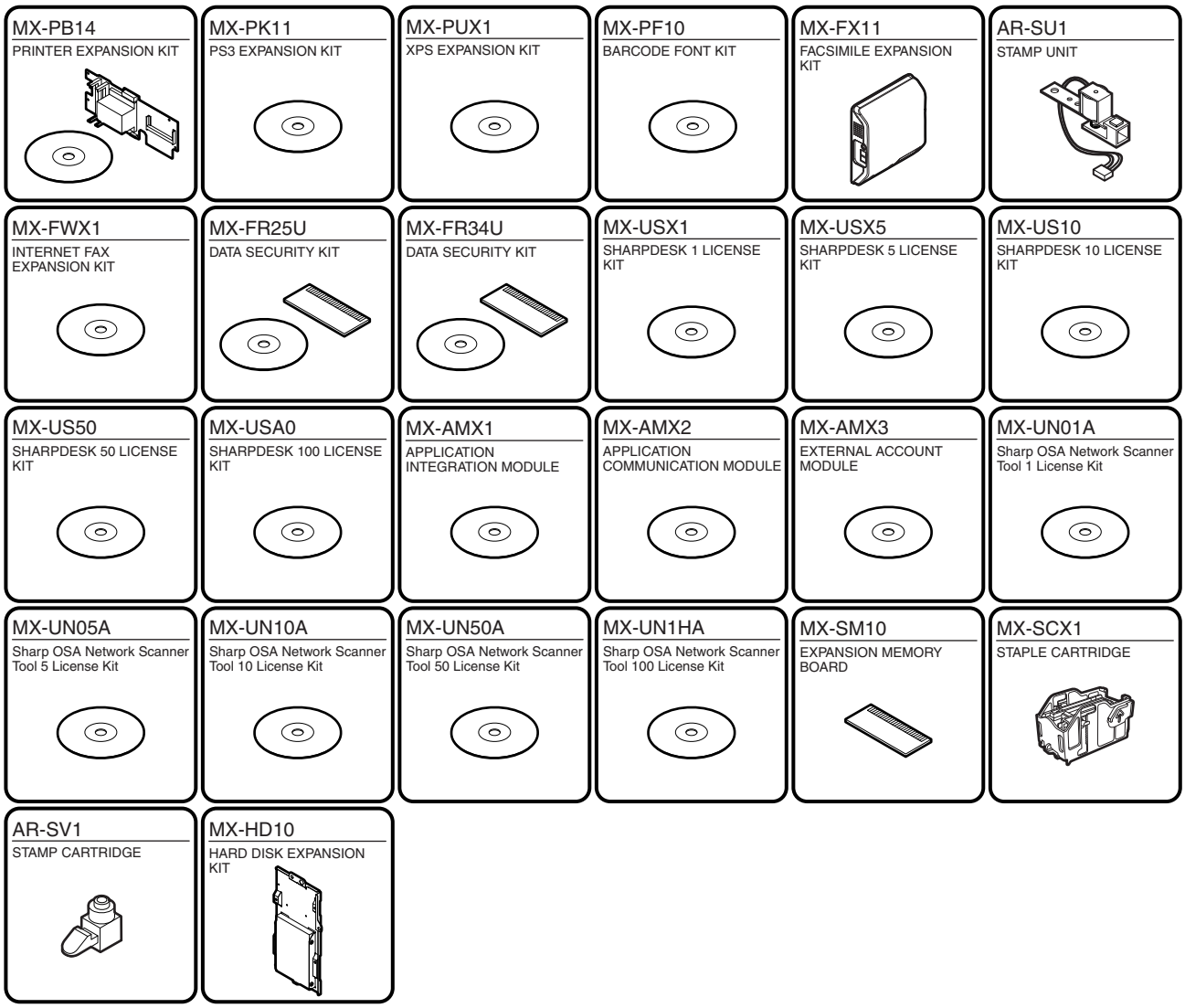
A. 18cpm machine



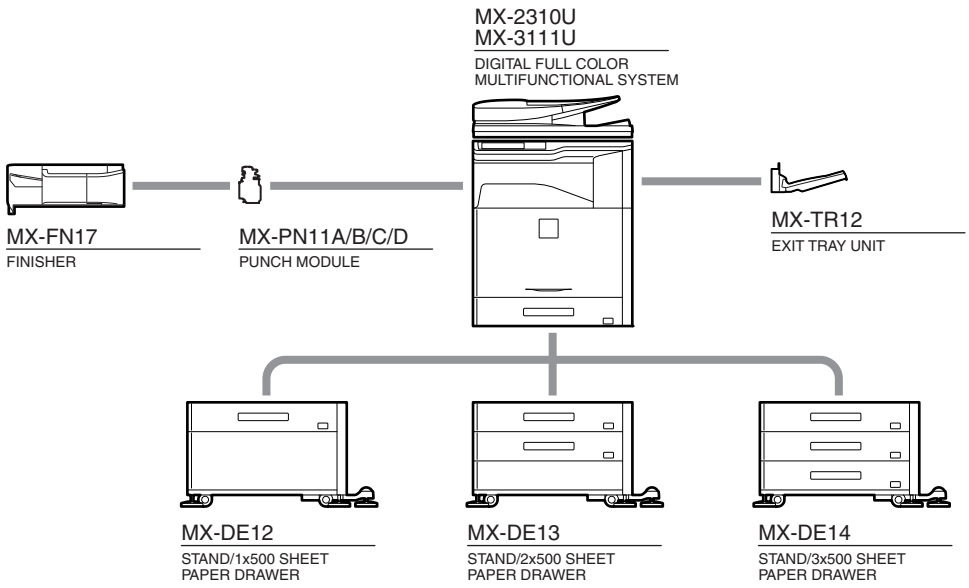


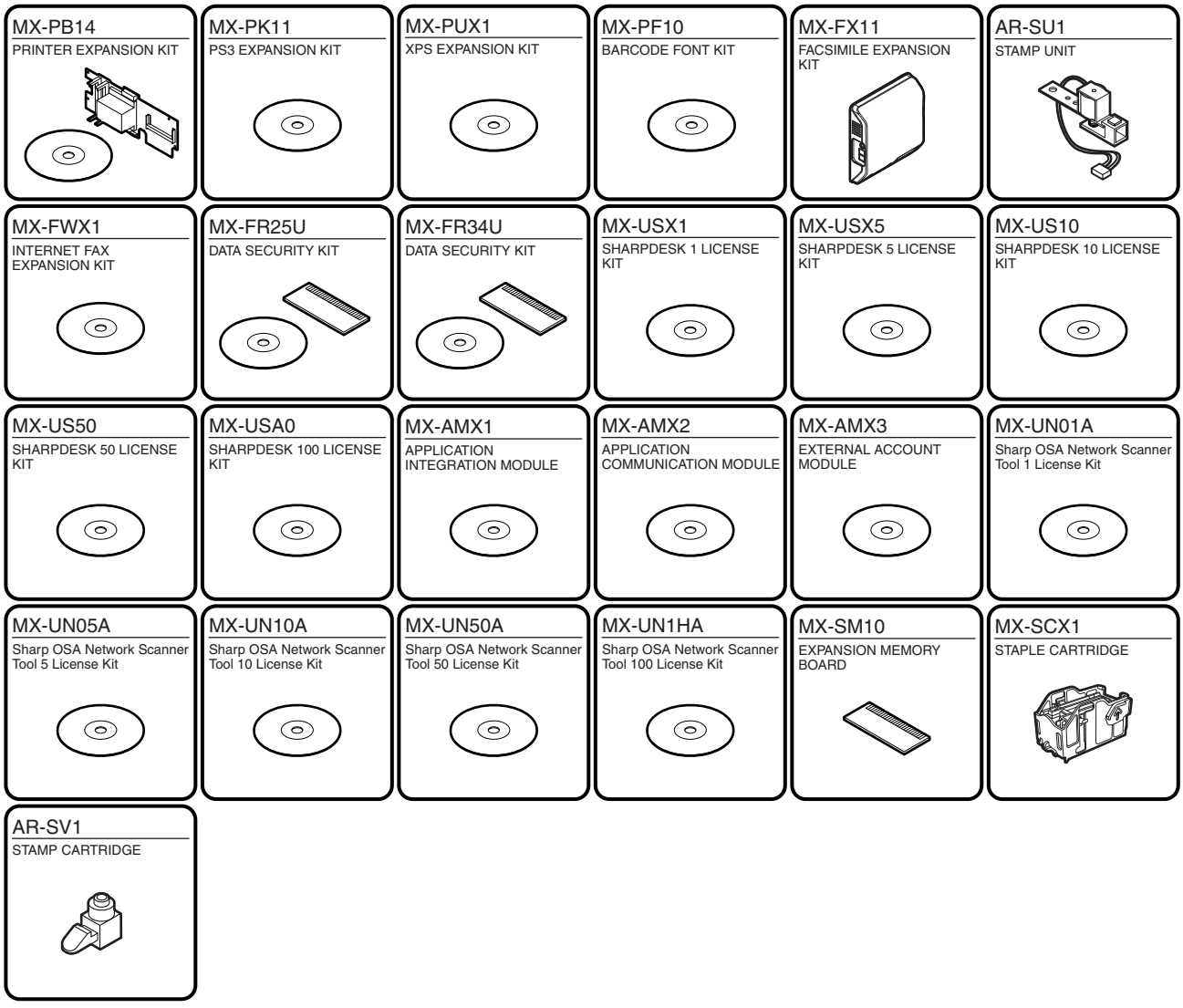
B. 20cpm machine



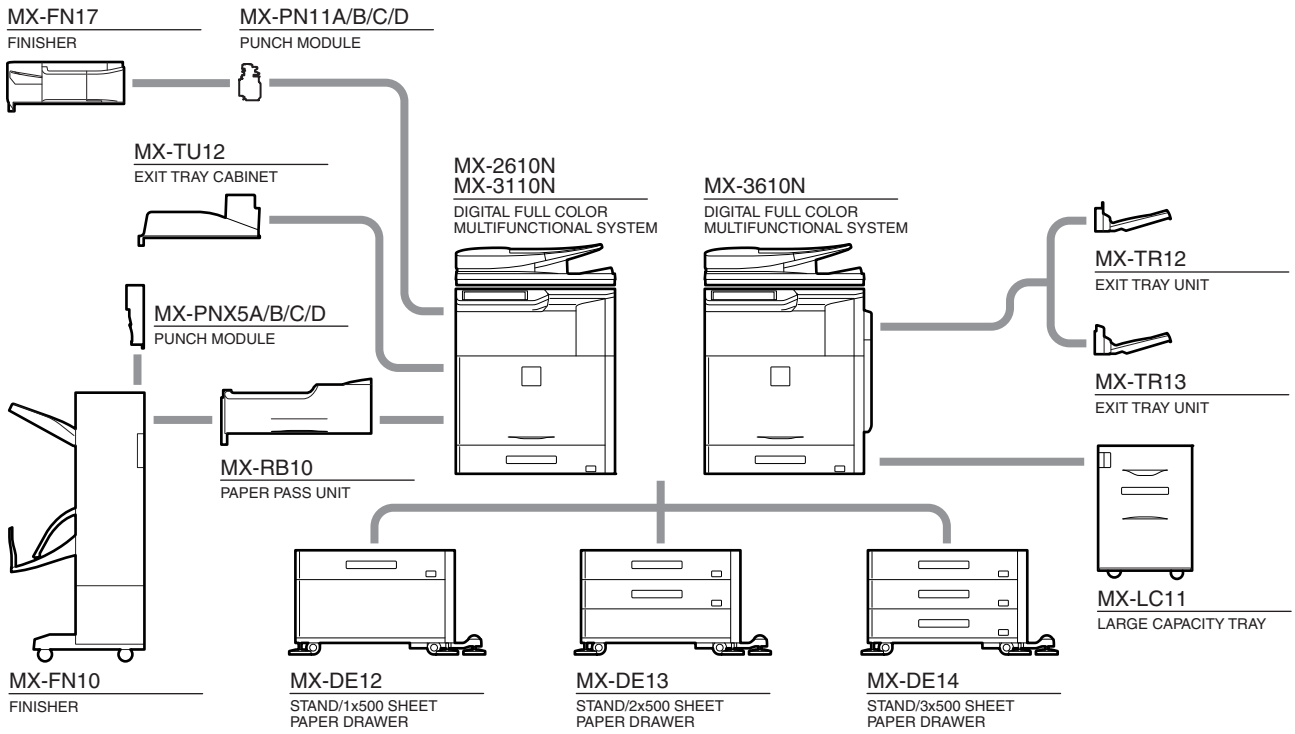


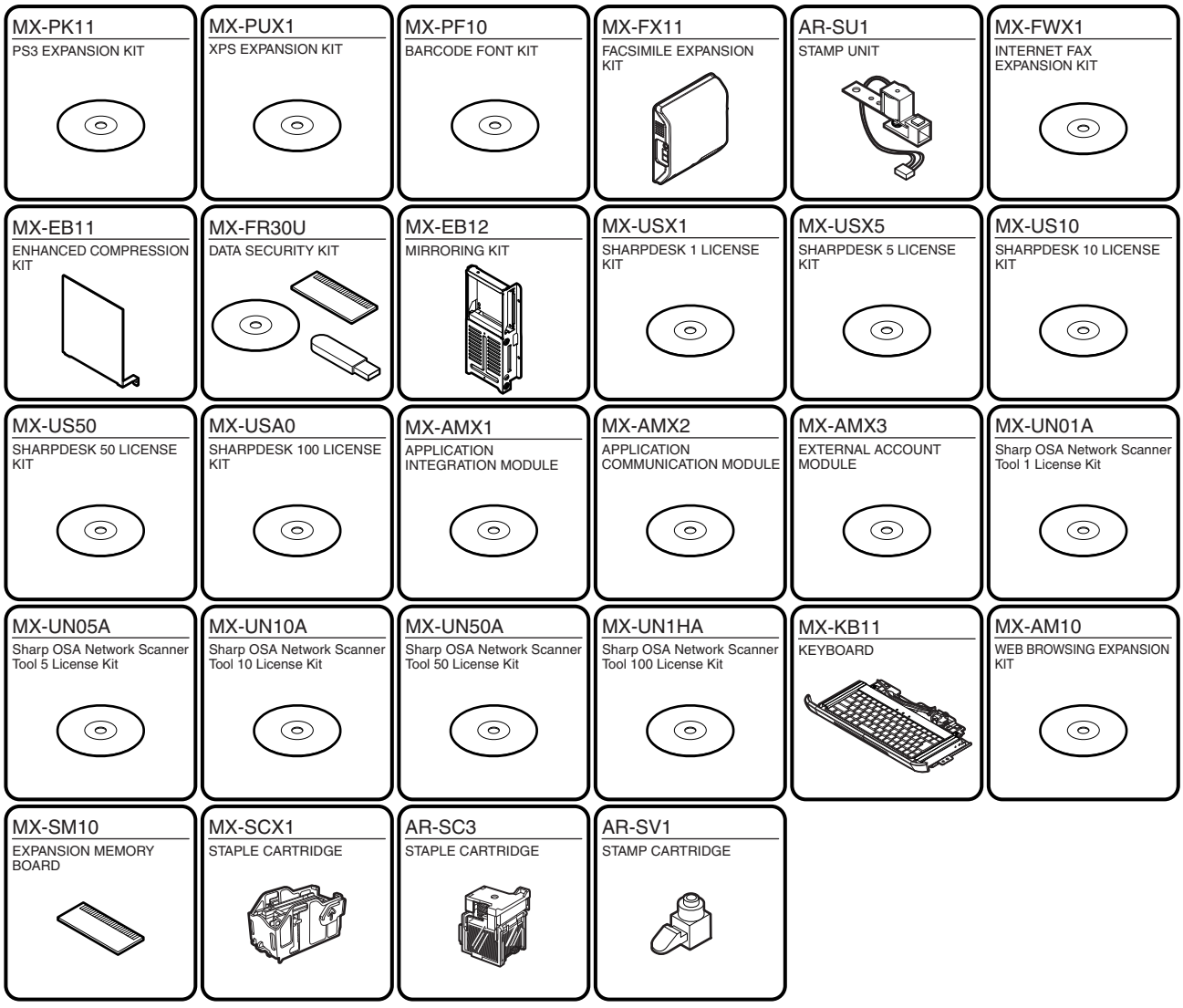
C. 23cpm/31cpm(G) machine





D. 26cpm/36cpm/31cpm(A) machine





2. Option list

	Model name	Name	MX-1810U	MX-2010U	MX-2310U	MX-3111U	MX-2610N	MX-3110N	MX-3610N	Rem-arks
Document feed system	MX-RP12	REVERSING SINGLE PASS FEEDER	OPT	OPT	STD	STD	STD	STD	STD	
	MX-VR11	DOCUMENT COVER	OPT	OPT	---	---	---	---	---	
Paper feed system	MX-DE12	STAND/1x500 SHEET PAPER DRAWER	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-DE13	STAND/2x500 SHEET PAPER DRAWER	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-DE14	STAND/3x500 SHEET PAPER DRAWER	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-LC11	LARGE CAPACITY TRAY	---	---	---	---	OPT	OPT	OPT	
Paper exit system	MX-TR12	EXIT TRAY UNIT	---	OPT	OPT	OPT	OPT	OPT	---	
	MX-TR13	EXIT TRAY UNIT	---	---	---	---	---	---	OPT	
	MX-TU12	EXIT TRAY CABINET	---	STD	STD	STD	STD/ OPT	STD/ OPT	STD/ OPT	*6
	MX-FN17	FINISHER	---	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-PN11A	PUNCH MODULE	---	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-PN11B		---	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-PN11C		---	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-PN11D		---	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-RB10	PAPER PASS UNIT	---	---	---	---	OPT	OPT	OPT	
	MX-FN10	FINISHER	---	---	---	---	OPT	OPT	OPT	
	MX-PNX5A	PUNCH MODULE	---	---	---	---	OPT	OPT	OPT	
	MX-PNX5B		---	---	---	---	OPT	OPT	OPT	
	MX-PNX5C		---	---	---	---	OPT	OPT	OPT	
	MX-PNX5D		---	---	---	---	OPT	OPT	OPT	
Printer expansion	MX-PB14	PRINTER EXPANSION KIT	OPT	OPT	OPT	OPT	STD	STD	STD	
	MX-PK11	PS3 EXPANSION KIT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	*1
	MX-PUX1	XPS EXPANSION KIT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	*1 *2
	MX-PF10	BARCODE FONT KIT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	*1
Image send expansion	MX-FX11	FACSIMILE EXPANSION KIT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	*3
	AR-SU1	STAMP UNIT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-FWX1	INTERNET FAX EXPANSION KIT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-EB11	ENHANCED COMPRESSION KIT	---	---	---	---	OPT	OPT	OPT	
Authentication/ Security	MX-FR25U	DATA SECURITY KIT	---	OPT	OPT	---	---	---	---	
	MX-FR34U	DATA SECURITY KIT	---	OPT	OPT	OPT	---	---	---	
	MX-FR30U	DATA SECURITY KIT	---	---	---	---	OPT	OPT	OPT	
	MX-EB12	MIRRORING KIT	---	---	---	---	OPT	OPT	OPT	
Application/ Solution	MX-USX1	SHARPDESK 1 LICENSE KIT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-USX5	Sharpdesk 5 license kit	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-US10	SHARPDESK 10 LICENSE KIT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-US50	SHARPDESK 50 LICENSE KIT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-USA0	SHARPDESK 100 LICENSE KIT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-AMX1	APPLICATION INTEGRATION MODULE	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-AMX2	APPLICATION COMMUNICATION MODULE	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-AMX3	EXTERNAL ACCOUNT MODULE	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-UN01A	Sharp OSA Network Scanner Tool 1 License Kit	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-UN05A	Sharp OSA Network Scanner Tool 5 License Kit	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-UN10A	Sharp OSA Network Scanner Tool 10 License Kit	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-UN50A	Sharp OSA Network Scanner Tool 50 License Kit	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-UN1HA	Sharp OSA Network Scanner Tool 100 License Kit	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
	MX-KB11	KEYBOARD	---	---	---	---	OPT	STD/ OPT	STD/ OPT	*7
	MX-AM10	WEB BROWSING EXPANSION KIT	---	---	---	---	OPT	OPT	STD/ OPT	*7
Memory	MX-SM10	EXPANSION MEMORY BOARD	OPT	OPT	OPT	OPT	OPT	OPT	OPT	*5
Service	MX-SCX1	STAPLE CARTRIDGE	---	OPT	OPT	OPT	OPT	OPT	OPT	*4
	AR-SC3	STAPLE CARTRIDGE	---	---	---	---	OPT	OPT	OPT	*4
	AR-SV1	STAMP CARTRIDGE	OPT	OPT	OPT	OPT	OPT	OPT	OPT	
Other	MX-HD10	HARD DISK EXPANSION KIT	---	OPT	STD	STD	STD	STD	STD	
	MX-HD11	HARD DISK EXPANSION KIT	OPT	---	---	---	---	---	---	

STD: Standard equipment

OPT: Installable option

*1: The printer expansion kit is required.

*2: Memory expansion is required.

*3: No support for some destinations.

*4: Supply parts

*5: Required when the XPS printer is used.

*6: Option set for North America and Europe only.

*7: Standard for North America only.

[2] CONSUMABLE PARTS

1. Supply system table

A. 18cpm machine

(1) Europe

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Black)	Toner cartridge (Black toner) x 1	18K	MX-23GT-BA	10	* Life: A4/Letter size at area coverage 5% (Reference: 15K for A4/ Letter 6%)
Toner cartridge (Cyan)	Toner cartridge (Cyan toner) x 1	10K	MX-23GT-CA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Magenta)	Toner cartridge (Magenta toner) x 1	10K	MX-23GT-MA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Yellow)	Toner cartridge (Yellow toner) x 1	10K	MX-23GT-YA	10	* Life: A4/Letter size at area coverage 5%
Developer (Black)	Developer (Black developer) x 1	80K	MX-36GV-BA	10	
Developer (Cyan/Magenta/ Yellow: 3 colors/set)	Developer (Cyan/Magenta/Yellow: 3 colors/set) (Developer (each colors)) x 1	50K	MX-36GV-SA	10	
Drum	OPC drum x 1	80K (Black) 50K (Color)	MX-36GR-SA	10	
Drum unit	OPC drum unit (Process unit + OPC drum) x 1 Color identification seal (B/C/M/Y) x 1 each x 1 Charger cleaner x 1	80K (Black) 50K (Color)	MX-36GU-SA	10	

(2) Asia, Hong Kong

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Black)	Toner cartridge (Black toner) x 1	18K	MX-23AT-BA	10	* Life: A4/Letter size at area coverage 5% (Reference: 15K for A4/ Letter 6%)
Toner cartridge (Cyan)	Toner cartridge (Cyan toner) x 1	10K	MX-23AT-CA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Magenta)	Toner cartridge (Magenta toner) x 1	10K	MX-23AT-MA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Yellow)	Toner cartridge (Yellow toner) x 1	10K	MX-23AT-YA	10	* Life: A4/Letter size at area coverage 5%
Developer (Black)	Developer (Black developer) x 1	80K	MX-36AV-BA	10	
Developer (Cyan/Magenta/ Yellow: 3 colors/set)	Developer (Cyan/Magenta/Yellow: 3 colors/set) (Developer (each colors)) x 1	50K	MX-36AV-SA	10	
Drum	OPC drum x 1	80K (Black) 50K (Color)	MX-36AR-SA	10	
Drum unit	OPC drum unit (Process unit + OPC drum) x 1 Color identification seal (B/C/M/Y) x 1 each x 1 Charger cleaner x 1	80K (Black) 50K (Color)	MX-36AU-SA	10	

(3) Middle East, Africa

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Black)	Toner cartridge (Black toner) x 1	18K	MX-23FT-BA	10	* Life: A4/Letter size at area coverage 5% (Reference: 15K for A4/ Letter 6%)
Toner cartridge (Cyan)	Toner cartridge (Cyan toner) x 1	10K	MX-23FT-CA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Magenta)	Toner cartridge (Magenta toner) x 1	10K	MX-23FT-MA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Yellow)	Toner cartridge (Yellow toner) x 1	10K	MX-23FT-YA	10	* Life: A4/Letter size at area coverage 5%
Developer (Black)	Developer (Black developer) x 1	80K	MX-36FV-BA	10	
Developer (Cyan/Magenta/ Yellow: 3 colors/set)	Developer (Cyan/Magenta/Yellow: 3 colors/set) (Developer (each colors)) x 1	50K	MX-36FV-SA	10	

Item	Content	Life	Model name	Quantity in collective package	Remarks
Drum	OPC drum x 1	80K (Black) 50K (Color)	MX-36FR-SA	10	
Drum unit	OPC drum unit (Process unit + OPC drum) x 1 Color identification seal (B/C/M/Y) x 1 each x 1 Charger cleaner x 1	80K (Black) 50K (Color)	MX-36FU-SA	10	

(4) Taiwan

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Black)	Toner cartridge (Black toner) x 1	18K	MX-23FT-BA	10	* Life: A4/Letter size at area coverage 5% (Reference: 15K for A4/ Letter 6%)
Toner cartridge (Cyan)	Toner cartridge (Cyan toner) x 1	10K	MX-23FT-CA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Magenta)	Toner cartridge (Magenta toner) x 1	10K	MX-23FT-MA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Yellow)	Toner cartridge (Yellow toner) x 1	10K	MX-23FT-YA	10	* Life: A4/Letter size at area coverage 5%
Toner Cartridge (Special Magenta)	Toner Cartridge (Special Magenta) x 1	10K	MX-23FT-MP	10	* Life: A4/Letter size at area coverage 5%
Developer (Black)	Developer (Black developer) x 1	80K	MX-36FV-BA	10	
Developer (Cyan/Magenta/ Yellow: 3 colors/set)	Developer (Cyan/Magenta/Yellow: 3 colors/set) (Developer (each colors)) x 1	50K	MX-36FV-SA	10	
Developer (Cyan/ Special Magenta/ Yellow: 3 colors/set)	Developer (Cyan/Special Magenta/Yellow: 3 colors/set) (Developer (each colors)) x 1	80K (Black) 50K (Color)	MX-23FV-SP	10	
Drum	OPC drum x 1	80K (Black) 50K (Color)	MX-36FR-SA	10	
Drum unit	OPC drum unit (Process unit + OPC drum) x 1 Color identification seal (B/C/M/Y) x 1 each x 1 Charger cleaner x 1	100K (Black) 60K (Color)	MX-36FU-SA	10	

B. 23cpm machine

(1) North America, Middle America, South America (Except Brazil)

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Black)	Toner cartridge (Black toner) x 1	18K	MX-23NT-BA	10	* Life: A4/Letter size at area coverage 5% (Reference: 15K for A4/ Letter 6%)
Toner cartridge (Cyan)	Toner cartridge (Cyan toner) x 1	10K	MX-23NT-CA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Magenta)	Toner cartridge (Magenta toner) x 1	10K	MX-23NT-MA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Yellow)	Toner cartridge (Yellow toner) x 1	10K	MX-23NT-YA	10	* Life: A4/Letter size at area coverage 5%
Developer (Black)	Developer (Black developer) x 1	100K	MX-36NV-BA	10	
Developer (Cyan/Magenta/ Yellow: 3 colors/set)	Developer (Cyan/Magenta/Yellow: 3 colors/set) (Developer (each colors)) x 1	60K	MX-36NV-SA	10	
Drum	OPC drum x 1	100K (Black) 60K (Color)	MX-36NR-SA	10	
Drum unit	OPC drum unit (Process unit + OPC drum) x 1 Color identification seal (B/C/M/Y) x 1 each x 1 Charger cleaner x 1	100K (Black) 60K (Color)	MX-36NU-SA	10	

C. 31cpm(G) machine

(1) North America, Middle America, South America (Except Brazil)

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Black)	Toner cartridge (Black toner) x 1	18K	MX-23NT-BA	10	* Life: A4/Letter size at area coverage 5% (Reference: 15K for A4/ Letter 6%)

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Cyan)	Toner cartridge (Cyan toner) x 1	10K	MX-23NT-CA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Magenta)	Toner cartridge (Magenta toner) x 1	10K	MX-23NT-MA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Yellow)	Toner cartridge (Yellow toner) x 1	10K	MX-23NT-YA	10	* Life: A4/Letter size at area coverage 5%
Developer (Black)	Developer (Black developer) x 1	100K	MX-36NV-BA	10	
Developer (Cyan/Magenta/ Yellow: 3 colors/set)	Developer (Cyan/Magenta/Yellow: 3 colors/set) (Developer (each colors)) x 1	60K	MX-36NV-SA	10	
Drum	OPC drum x 1	100K (Black) 60K (Color)	MX-36NR-SA	10	
Drum unit	OPC drum unit (Process unit + OPC drum) x 1 Color identification seal (B/C/M/Y) x 1 each x 1 Charger cleaner x 1	100K (Black) 60K (Color)	MX-36NU-SB	10	

D. 20cpm/23cpm/31cpm(G) machine

(1) Europe, Eastern Europe, Russia, Australia, New Zealand

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Black)	Toner cartridge (Black toner) x 1	18K	MX-23GT-BA	10	* Life: A4/Letter size at area coverage 5% (Reference: 15K for A4/ Letter 6%)
Toner cartridge (Cyan)	Toner cartridge (Cyan toner) x 1	10K	MX-23GT-CA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Magenta)	Toner cartridge (Magenta toner) x 1	10K	MX-23GT-MA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Yellow)	Toner cartridge (Yellow toner) x 1	10K	MX-23GT-YA	10	* Life: A4/Letter size at area coverage 5%
Developer (Black)	Developer (Black developer) x 1	100K	MX-36GV-BA	10	
Developer (Cyan/Magenta/ Yellow: 3 colors/set)	Developer (Cyan/Magenta/Yellow: 3 colors/set) (Developer (each colors)) x 1	60K	MX-36GV-SA	10	
Drum	OPC drum x 1	100K (Black) 60K (Color)	MX-36GR-SA	10	
Drum unit	OPC drum unit (Process unit + OPC drum) x 1 Color identification seal (B/C/M/Y) x 1 each x 1 Charger cleaner x 1	100K (Black) 60K (Color)	MX-36GU-SA	10	

(2) Asia, Hong Kong

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Black)	Toner cartridge (Black toner) x 1	18K	MX-23AT-BA	10	* Life: A4/Letter size at area coverage 5% (Reference: 15K for A4/ Letter 6%)
Toner cartridge (Cyan)	Toner cartridge (Cyan toner) x 1	10K	MX-23AT-CA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Magenta)	Toner cartridge (Magenta toner) x 1	10K	MX-23AT-MA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Yellow)	Toner cartridge (Yellow toner) x 1	10K	MX-23AT-YA	10	* Life: A4/Letter size at area coverage 5%
Developer (Black)	Developer (Black developer) x 1	100K	MX-36AV-BA	10	
Developer (Cyan/Magenta/ Yellow: 3 colors/set)	Developer (Cyan/Magenta/Yellow: 3 colors/set) (Developer (each colors)) x 1	60K	MX-36AV-SA	10	
Drum	OPC drum x 1	100K (Black) 60K (Color)	MX-36AR-SA	10	
Drum unit	OPC drum unit (Process unit + OPC drum) x 1 Color identification seal (B/C/M/Y) x 1 each x 1 Charger cleaner x 1	100K (Black) 60K (Color)	MX-36AU-SA	10	

(3) Middle East, Africa

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Black)	Toner cartridge (Black toner) x 1	18K	MX-23FT-BA	10	* Life: A4/Letter size at area coverage 5% (Reference: 15K for A4/ Letter 6%)
Toner cartridge (Cyan)	Toner cartridge (Cyan toner) x 1	10K	MX-23FT-CA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Magenta)	Toner cartridge (Magenta toner) x 1	10K	MX-23FT-MA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Yellow)	Toner cartridge (Yellow toner) x 1	10K	MX-23FT-YA	10	* Life: A4/Letter size at area coverage 5%
Developer (Black)	Developer (Black developer) x 1	100K	MX-36FV-BA	10	
Developer (Cyan/Magenta/ Yellow: 3 colors/set)	Developer (Cyan/Magenta/Yellow: 3 colors/set) (Developer (each colors)) x 1	60K	MX-36FV-SA	10	
Drum	OPC drum x 1	100K (Black) 60K (Color)	MX-36FR-SA	10	
Drum unit	OPC drum unit (Process unit + OPC drum) x 1 Color identification seal (B/C/M/Y) x 1 each x 1 Charger cleaner x 1	100K (Black) 60K (Color)	MX-36FU-SA	10	

(4) Taiwan

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Black)	Toner cartridge (Black toner) x 1	18K	MX-23FT-BA	10	* Life: A4/Letter size at area coverage 5% (Reference: 15K for A4/ Letter 6%)
Toner cartridge (Cyan)	Toner cartridge (Cyan toner) x 1	10K	MX-23FT-CA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Magenta)	Toner cartridge (Magenta toner) x 1	10K	MX-23FT-MA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Yellow)	Toner cartridge (Yellow toner) x 1	10K	MX-23FT-YA	10	* Life: A4/Letter size at area coverage 5%
Toner Cartridge (Special Magenta)	Toner Cartridge (Special Magenta) x 1	10K	MX-23FT-MP	10	* Life: A4/Letter size at area coverage 5%
Developer (Black)	Developer (Black developer) x 1	100K	MX-36FV-BA	10	
Developer (Cyan/Magenta/ Yellow: 3 colors/set)	Developer (Cyan/Magenta/Yellow: 3 colors/set) (Developer (each colors)) x 1	60K	MX-36FV-SA	10	
Developer (Cyan/ Special Magenta/ Yellow: 3 colors/set)	Developer (Cyan/Special Magenta/Yellow: 3 colors/set) (Developer (each colors)) x 1	60K	MX-23FV-SP	10	
Drum	OPC drum x 1	100K (Black) 60K (Color)	MX-36FR-SA	10	
Drum unit	OPC drum unit (Process unit + OPC drum) x 1 Color identification seal (B/C/M/Y) x 1 each x 1 Charger cleaner x 1	100K (Black) 60K (Color)	MX-36FU-SA	10	

E. 26cpm/31cpm(A) machine

(1) North America, Middle America, South America (Except Brazil)

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Black)	Toner cartridge (Black toner) x 1	24K	MX-36NT-BA	10	* Life: A4/Letter size at area coverage 5% (Reference: 20K for A4/ Letter 6%)
Toner cartridge (Cyan)	Toner cartridge (Cyan toner) x 1	15K	MX-36NT-CA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Magenta)	Toner cartridge (Magenta toner) x 1	15K	MX-36NT-MA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Yellow)	Toner cartridge (Yellow toner) x 1	15K	MX-36NT-YA	10	* Life: A4/Letter size at area coverage 5%
Developer (Black)	Developer (Black developer) x 1	100K	MX-36NV-BA	10	
Developer (Cyan/Magenta/ Yellow: 3 colors/set)	Developer (Cyan/Magenta/Yellow: 3 colors/set) (Developer (each colors)) x 1	60K	MX-36NV-SA	10	

Item	Content	Life	Model name	Quantity in collective package	Remarks
Drum	OPC drum x 1	100K (Black) 60K (Color)	MX-36NR-SA	10	
Drum unit	OPC drum unit (Process unit + OPC drum) x 1 Color identification seal (B/C/M/Y) x 1 each x 1 Charger cleaner x 1	100K (Black) 60K (Color)	MX-36NU-SB	10	

(2) Europe, Eastern Europe, Russia, Australia, New Zealand

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Black)	Toner cartridge (Black toner) x 1	24K	MX-36GT-BA	10	* Life: A4/Letter size at area coverage 5% (Reference: 20K for A4/ Letter 6%)
Toner cartridge (Cyan)	Toner cartridge (Cyan toner) x 1	15K	MX-36GT-CA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Magenta)	Toner cartridge (Magenta toner) x 1	15K	MX-36GT-MA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Yellow)	Toner cartridge (Yellow toner) x 1	15K	MX-36GT-YA	10	* Life: A4/Letter size at area coverage 5%
Developer (Black)	Developer (Black developer) x 1	100K	MX-36GV-BA	10	
Developer (Cyan/Magenta/ Yellow: 3 colors/set)	Developer (Cyan/Magenta/Yellow: 3 colors/set) (Developer (each colors)) x 1	60K	MX-36GV-SA	10	
Drum	OPC drum x 1	100K (Black) 60K (Color)	MX-36GR-SA	10	
Drum unit	OPC drum unit (Process unit + OPC drum) x 1 Color identification seal (B/C/M/Y) x 1 each x 1 Charger cleaner x 1	100K (Black) 60K (Color)	MX-36GU-SA	10	

(3) Asia, Hong Kong

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Black)	Toner cartridge (Black toner) x 1	24K	MX-36AT-BA	10	* Life: A4/Letter size at area coverage 5% (Reference: 20K for A4/ Letter 6%)
Toner cartridge (Cyan)	Toner cartridge (Cyan toner) x 1	15K	MX-36AT-CA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Magenta)	Toner cartridge (Magenta toner) x 1	15K	MX-36AT-MA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Yellow)	Toner cartridge (Yellow toner) x 1	15K	MX-36AT-YA	10	* Life: A4/Letter size at area coverage 5%
Developer (Black)	Developer (Black developer) x 1	100K	MX-36AV-BA	10	
Developer (Cyan/Magenta/ Yellow: 3 colors/set)	Developer (Cyan/Magenta/Yellow: 3 colors/set) (Developer (each colors)) x 1	60K	MX-36AV-SA	10	
Drum	OPC drum x 1	100K (Black) 60K (Color)	MX-36AR-SA	10	
Drum unit	OPC drum unit (Process unit + OPC drum) x 1 Color identification seal (B/C/M/Y) x 1 each x 1 Charger cleaner x 1	100K (Black) 60K (Color)	MX-36AU-SA	10	

(4) Middle East, Taiwan, Africa

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Black)	Toner cartridge (Black toner) x 1	24K	MX-36FT-BA	10	* Life: A4/Letter size at area coverage 5% (Reference: 20K for A4/ Letter 6%)
Toner cartridge (Cyan)	Toner cartridge (Cyan toner) x 1	15K	MX-36FT-CA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Magenta)	Toner cartridge (Magenta toner) x 1	15K	MX-36FT-MA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Yellow)	Toner cartridge (Yellow toner) x 1	15K	MX-36FT-YA	10	* Life: A4/Letter size at area coverage 5%
Developer (Black)	Developer (Black developer) x 1	100K	MX-36FV-BA	10	

Item	Content	Life	Model name	Quantity in collective package	Remarks
Developer (Cyan/Magenta/ Yellow: 3 colors/set)	Developer x 1 (Cyan/Magenta/Yellow: 3 colors/set) (Developer (each colors))	60K	MX-36FV-SA	10	
Drum	OPC drum x 1	100K (Black) 60K (Color)	MX-36FR-SA	10	
Drum unit	OPC drum unit (Process unit + OPC drum) x 1 Color identification seal (B/C/M/Y) x 1 each x 1 Charger cleaner x 1	100K (Black) 60K (Color)	MX-36FU-SA	10	

F. 36cpm machine

(1) North America, Middle America, South America (Except Brazil)

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Black)	Toner cartridge (Black toner) x 1	24K	MX-36NT-BA	10	* Life: A4/Letter size at area coverage 5% (Reference: 20K for A4/ Letter 6%)
Toner cartridge (Cyan)	Toner cartridge (Cyan toner) x 1	15K	MX-36NT-CA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Magenta)	Toner cartridge (Magenta toner) x 1	15K	MX-36NT-MA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Yellow)	Toner cartridge (Yellow toner) x 1	15K	MX-36NT-YA	10	* Life: A4/Letter size at area coverage 5%
Developer (Black)	Developer (Black developer) x 1	120K	MX-36NV-BA	10	
Developer (Cyan/Magenta/ Yellow: 3 colors/set)	Developer x 1 (Cyan/Magenta/Yellow: 3 colors/set) (Developer (each colors))	70K	MX-36NV-SA	10	
Drum	OPC drum x 1	120K (Black) 70K (Color)	MX-36NR-SA	10	
Drum unit	OPC drum unit (Process unit + OPC drum) x 1 Color identification seal (B/C/M/Y) x 1 each x 1 Charger cleaner x 1	120K (Black) 70K (Color)	MX-36NU-SB	10	

(2) Europe, Eastern Europe, Russia, Australia, New Zealand

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Black)	Toner cartridge (Black toner) x 1	24K	MX-36GT-BA	10	* Life: A4/Letter size at area coverage 5% (Reference: 20K for A4/ Letter 6%)
Toner cartridge (Cyan)	Toner cartridge (Cyan toner) x 1	15K	MX-36GT-CA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Magenta)	Toner cartridge (Magenta toner) x 1	15K	MX-36GT-MA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Yellow)	Toner cartridge (Yellow toner) x 1	15K	MX-36GT-YA	10	* Life: A4/Letter size at area coverage 5%
Developer (Black)	Developer (Black developer) x 1	120K	MX-36GV-BA	10	
Developer (Cyan/Magenta/ Yellow: 3 colors/set)	Developer x 1 (Cyan/Magenta/Yellow: 3 colors/set) (Developer (each colors))	70K	MX-36GV-SA	10	
Drum	OPC drum x 1	120K (Black) 70K (Color)	MX-36GR-SA	10	
Drum unit	OPC drum unit (Process unit + OPC drum) x 1 Color identification seal (B/C/M/Y) x 1 each x 1 Charger cleaner x 1	120K (Black) 70K (Color)	MX-36GU-SA	10	

(3) Asia, Hong Kong

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Black)	Toner cartridge (Black toner) x 1	24K	MX-36AT-BA	10	* Life: A4/Letter size at area coverage 5% (Reference: 20K for A4/ Letter 6%)
Toner cartridge (Cyan)	Toner cartridge (Cyan toner) x 1	15K	MX-36AT-CA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Magenta)	Toner cartridge (Magenta toner) x 1	15K	MX-36AT-MA	10	* Life: A4/Letter size at area coverage 5%

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Yellow)	Toner cartridge (Yellow toner) x 1	15K	MX-36AT-YA	10	* Life: A4/Letter size at area coverage 5%
Developer (Black)	Developer (Black developer) x 1	120K	MX-36AV-BA	10	
Developer (Cyan/Magenta/ Yellow: 3 colors/set)	Developer (Cyan/Magenta/Yellow: 3 colors/set) (Developer (each colors)) x 1	70K	MX-36AV-SA	10	
Drum	OPC drum x 1	120K (Black) 70K (Color)	MX-36AR-SA	10	
Drum unit	OPC drum unit (Process unit + OPC drum) x 1 Color identification seal (B/C/M/Y) x 1 each x 1 Charger cleaner x 1	120K (Black) 70K (Color)	MX-36AU-SA	10	

(4) Middle East, Taiwan, Africa

Item	Content	Life	Model name	Quantity in collective package	Remarks
Toner cartridge (Black)	Toner cartridge (Black toner) x 1	24K	MX-36FT-BA	10	* Life: A4/Letter size at area coverage 5% (Reference: 20K for A4/ Letter 6%)
Toner cartridge (Cyan)	Toner cartridge (Cyan toner) x 1	15K	MX-36FT-CA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Magenta)	Toner cartridge (Magenta toner) x 1	15K	MX-36FT-MA	10	* Life: A4/Letter size at area coverage 5%
Toner cartridge (Yellow)	Toner cartridge (Yellow toner) x 1	15K	MX-36FT-YA	10	* Life: A4/Letter size at area coverage 5%
Developer (Black)	Developer (Black developer) x 1	120K	MX-36FV-BA	10	
Developer (Cyan/Magenta/ Yellow: 3 colors/set)	Developer (Cyan/Magenta/Yellow: 3 colors/set) (Developer (each colors)) x 1	70K	MX-36FV-SA	10	
Drum	OPC drum x 1	120K (Black) 70K (Color)	MX-36FR-SA	10	
Drum unit	OPC drum unit (Process unit + OPC drum) x 1 Color identification seal (B/C/M/Y) x 1 each x 1 Charger cleaner x 1	120K (Black) 70K (Color)	MX-36FU-SA	10	

2. Maintenance parts list

A. 18cpm machine

(1) Europe, Taiwan

Item	Model name	Content	Life	Quantity in collective package	Remarks
Upper heat roller kit	MX-200UH	Upper heat roller x 1	80K	10	
Lower heat roller kit	MX-200LH	Lower heat roller x 1	80K	10	
Fusing cleaning kit	MX-230CR	Lower oil roller x 1 Lower CL roller x 1 Lower CL roller bearing x 2 Lower CL scraper x 1	80K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR x 1	80K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR x 1	80K	10	
PTC kit	MX-230CU	PTC unit x 1	80K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3 x 1	240K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit x 1	80K	10	
Filter kit	MX-C31FL	Ozone filter x 1	80K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2) x 1	50K	5	5% coverage for each color; 25% color ratio
Main charger kit	MX-230MK	Main charger unit x 1 Cleaning gum AS AR x 1 Cleaning blade AR x 1	Black: 80K Color: 50K	10	
Staple cartridge	MX-SCX1	Staple cartridge x 3	5000 times x 3	20	For MX-FN17
Finish stamp cartridge	AR-SV1	Finish stamp cartridge x 2	—	20	
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation) x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation) x 1	—	1	
Fusing unit	MX-200FU	Fusing unit (For servicing rotation: Heater lamp 230V) x 1	—	1	
Fusing unit	MX-200FU2	Fusing unit (For servicing rotation: Heater lamp 110V) x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

(2) Singapore, Thailand, Malaysia, India, Middle east, Other countries

Item	Model name	Content	Life	Quantity in collective package	Remarks
Upper heat roller kit	MX-200UH	Upper heat roller x 1	80K	10	
Lower heat roller kit	MX-200LH	Lower heat roller x 1	80K	10	
Fusing cleaning kit	MX-230CR	Lower oil roller x 1 Lower CL roller x 1 Lower CL roller bearing x 2 Lower CL scraper x 1	80K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR x 1	80K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR x 1	80K	10	
PTC kit	MX-230CU	PTC unit x 1	80K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3 x 1	240K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit x 1	80K	10	
Filter kit	MX-C31FL	Ozone filter x 1	80K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2) x 1	50K	5	5% coverage for each color; 25% color ratio
Main charger kit	MX-230MK	Main charger unit x 1 Cleaning gum AS AR x 1 Cleaning blade AR x 1	Black: 80K Color: 50K	10	
Staple cartridge	MX-SCX1	Staple cartridge x 3	5000 times x 3	20	For MX-FN17
Finish stamp cartridge	AR-SV1	Finish stamp cartridge x 2	—	20	
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation) x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation) x 1	—	1	
Fusing unit	MX-200FU	Fusing unit (For servicing rotation: Heater lamp 230V) x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

B. 20cpm machine

(1) Europe, UK, Australia, New Zealand, Taiwan

Item	Model name	Content	Life	Quantity in collective package	Remarks
Upper heat roller kit	MX-200UH	Upper heat roller x 1	100K	10	
Lower heat roller kit	MX-200LH	Lower heat roller x 1	100K	10	
Fusing cleaning kit	MX-230CR	Lower oil roller x 1 Lower CL roller x 1 Lower CL roller bearing x 2 Lower CL scraper x 1	100K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR x 1	100K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR x 1	100K	10	
PTC kit	MX-230CU	PTC unit x 1	100K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3 x 1	300K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit x 1	100K	10	
Filter kit	MX-C31FL	Ozone filter x 1	100K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2) x 1	50K	5	5% coverage for each color; 25% color ratio
Main charger kit	MX-230MK	Main charger unit x 1 Cleaning gum AS AR x 1 Cleaning blade AR x 1	Black: 100K Color: 60K	10	
Staple cartridge	MX-SCX1	Staple cartridge x 3	5000 times x 3	20	For MX-FN17
Finish stamp cartridge	AR-SV1	Finish stamp cartridge x 2	—	20	
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation) x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation) x 1	—	1	
Fusing unit	MX-200FU	Fusing unit (For servicing rotation: Heater lamp 230V) x 1	—	1	
Fusing unit	MX-200FU2	Fusing unit (For servicing rotation: Heater lamp 110V) x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

(2) Singapore, Thailand, Malaysia, India, Middle east, Other countries

Item	Model name	Content	Life	Quantity in collective package	Remarks
Upper heat roller kit	MX-200UH	Upper heat roller x 1	100K	10	
Lower heat roller kit	MX-200LH	Lower heat roller x 1	100K	10	
Fusing cleaning kit	MX-230CR	Lower oil roller x 1 Lower CL roller x 1 Lower CL roller bearing x 2 Lower CL scraper x 1	100K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR x 1	100K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR x 1	100K	10	
PTC kit	MX-230CU	PTC unit x 1	100K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3 x 1	300K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit x 1	100K	10	
Filter kit	MX-C31FL	Ozone filter x 1	100K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2) x 1	50K	5	5% coverage for each color; 25% color ratio
Main charger kit	MX-230MK	Main charger unit x 1 Cleaning gum AS AR x 1 Cleaning blade AR x 1	Black: 100K Color: 60K	10	
Staple cartridge	MX-SCX1	Staple cartridge x 3	5000 times x 3	20	For MX-FN17
Finish stamp cartridge	AR-SV1	Finish stamp cartridge x 2	—	20	
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation) x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation) x 1	—	1	
Fusing unit	MX-200FU1	Fusing unit (For servicing rotation: Heater lamp 120V) x 1	—	1	
Fusing unit	MX-200FU	Fusing unit (For servicing rotation: Heater lamp 230V) x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

(3) Hong Kong

Item	Model name	Content	Life	Quantity in collective package	Remarks
Upper heat roller kit	MX-200UH	Upper heat roller x 1	100K	10	
Lower heat roller kit	MX-200LH	Lower heat roller x 1	100K	10	
Fusing cleaning kit	MX-230CR	Lower oil roller x 1 Lower CL roller x 1 Lower CL roller bearing x 2 Lower CL scraper x 1	100K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR x 1	100K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR x 1	100K	10	
PTC kit	MX-230CU	PTC unit x 1	100K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3 x 1	300K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit x 1	100K	10	
Filter kit	MX-C31FL	Ozone filter x 1	100K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2) x 1	50K	5	5% coverage for each color; 25% color ratio
Main charger kit	MX-230MK	Main charger unit x 1 Cleaning gum AS AR x 1 Cleaning blade AR x 1	Black: 100K Color: 60K	10	
Staple cartridge	MX-SCX1	Staple cartridge x 3	5000 times x 3	20	For MX-FN17
Finish stamp cartridge	AR-SV1	Finish stamp cartridge x 2	—	20	
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation) x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation) x 1	—	1	
Fusing unit	MX-200FU	Fusing unit (For servicing rotation: Heater lamp 230V) x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

Note

The numbers in the column of "Quantity in collective package" in the above list indicate the quantities for one package shipped from the factory. Since, however, the products are treated as one piece or one set, their model names and necessary quantities must be specified when ordering. Pay attention to that.

C. 23cpm machine

(1) North America, Middle America, South America

Item	Model name	Content	Life	Quantity in collective package	Remarks
Fusing belt kit	MX-230FB	Fusing belt x 1 Fuser belt guide collar x 2	100K	10	
Pressure roller kit	MX-230LH	Fusing roller x 1 Pressure roller x 1	200K	10	
Fusing cleaning kit	MX-230CR	Lower oil roller x 1 Lower CL roller x 1 Lower CL roller bearing x 2 Lower CL scraper x 1	100K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR x 1	100K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR x 1	100K	10	
PTC kit	MX-230CU	PTC unit x 1	100K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3 x 1	300K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit x 1	100K	10	
Filter kit	MX-C31FL	Ozone filter x 1	100K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2) x 1	50K	5	5% coverage for each color; 25% color ratio
Main charger kit	MX-230MK	Main charger unit x 1 Cleaning gum AS AR x 1 Cleaning blade AR x 1	Black: 100K Color: 60K	10	
Staple cartridge	MX-SCX1	Staple cartridge x 3	5000 times x 3	20	For inner finisher (MX-FN17)
Finish stamp cartridge	AR-SV1	Finish stamp cartridge x 2	—	20	
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation) x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation) x 1	—	1	
Fusing unit	MX-230FU1	Fusing unit (For servicing rotation: Heater lamp 120V) x 1	—	1	
Fusing unit	MX-230FU	Fusing unit (For servicing rotation: Heater lamp 230V) x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

(2) Europe, Eastern Europe, Russia, Australia, New Zealand

Item	Model name	Content	Life	Quantity in collective package	Remarks
Fusing belt kit	MX-230FB	Fusing belt x 1 Fuser belt guide collar x 2	100K	10	
Pressure roller kit	MX-230LH	Fusing roller x 1 Pressure roller x 1	200K	10	
Fusing cleaning kit	MX-230CR	Lower oil roller x 1 Lower CL roller x 1 Lower CL roller bearing x 2 Lower CL scraper x 1	100K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR x 1	100K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR x 1	100K	10	
PTC kit	MX-230CU	PTC unit x 1	100K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3 x 1	300K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit x 1	100K	10	
Filter kit	MX-C31FL	Ozone filter x 1	100K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2) x 1	50K	5	5% coverage for each color; 25% color ratio
Main charger kit	MX-230MK	Main charger unit x 1 Cleaning gum AS AR x 1 Cleaning blade AR x 1	Black: 100K Color: 60K	10	
Staple cartridge	MX-SCX1	Staple cartridge x 3	5000 times x 3	20	For MX-FN17
Finish stamp cartridge	AR-SV1	Finish stamp cartridge x 2	—	20	

Item	Model name	Content	Life	Quantity in collective package	Remarks
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation) x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation) x 1	—	1	
Fusing unit	MX-230FU	Fusing unit (For servicing rotation: Heater lamp 230V) x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

(3) Asia, Middle East

Item	Model name	Content	Life	Quantity in collective package	Remarks
Fusing belt kit	MX-230FB	Fusing belt x 1 Fuser belt guide collar x 2	100K	10	
Pressure roller kit	MX-230LH	Fusing roller x 1 Pressure roller x 1	200K	10	
Fusing cleaning kit	MX-230CR	Lower oil roller x 1 Lower CL roller x 1 Lower CL roller bearing x 2 Lower CL scraper x 1	100K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR x 1	100K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR x 1	100K	10	
PTC kit	MX-230CU	PTC unit x 1	100K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3 x 1	300K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit x 1	100K	10	
Filter kit	MX-C31FL	Ozone filter x 1	100K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2) x 1	50K	5	5% coverage for each color; 25% color ratio
Main charger kit	MX-230MK	Main charger unit x 1 Cleaning gum AS AR x 1 Cleaning blade AR x 1	Black: 100K Color: 60K	10	
Staple cartridge	MX-SCX1	Staple cartridge x 3	5000 times x 3	20	For MX-FN17
Finish stamp cartridge	AR-SV1	Finish stamp cartridge x 2	—	20	
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation) x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation) x 1	—	1	
Fusing unit	MX-230FU1	Fusing unit (For servicing rotation: Heater lamp 120V) x 1	—	1	
Fusing unit	MX-230FU	Fusing unit (For servicing rotation: Heater lamp 230V) x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

(4) Hong Kong

Item	Model name	Content	Life	Quantity in collective package	Remarks
Fusing belt kit	MX-230FB	Fusing belt x 1 Fuser belt guide collar x 2	100K	10	
Pressure roller kit	MX-230LH	Fusing roller x 1 Pressure roller x 1	200K	10	
Fusing cleaning kit	MX-230CR	Lower oil roller x 1 Lower CL roller x 1 Lower CL roller bearing x 2 Lower CL scraper x 1	100K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR x 1	100K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR x 1	100K	10	
PTC kit	MX-230CU	PTC unit x 1	100K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3 x 1	300K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit x 1	100K	10	
Filter kit	MX-C31FL	Ozone filter x 1	100K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2) x 1	50K	5	5% coverage for each color; 25% color ratio

Item	Model name	Content	Life	Quantity in collective package	Remarks
Main charger kit	MX-230MK	Main charger unit x 1 Cleaning gum AS AR x 1 Cleaning blade AR x 1	Black: 100K Color: 60K	10	
Staple cartridge	MX-SCX1	Staple cartridge x 3	5000 times x 3	20	For MX-FN17
Finish stamp cartridge	AR-SV1	Finish stamp cartridge x 2	—	20	
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation) x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation) x 1	—	1	
Fusing unit	MX-230FU	Fusing unit (For servicing rotation: Heater lamp 230V) x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

Note

The numbers in the column of "Quantity in collective package" in the above list indicate the quantities for one package shipped from the factory. Since, however, the products are treated as one piece or one set, their model names and necessary quantities must be specified when ordering. Pay attention to that.

D. 31cpm(G) machine

(1) North America, Middle America, South America

Item	Model name	Content	Life	Quantity in collective package	Remarks
Fusing belt kit	MX-360FB	Fusing belt x 1 Fuser belt guide collar x 2	200K	10	
Pressure roller kit	MX-230LH	Fusing roller x 1 Pressure roller x 1	200K	10	
Fusing cleaning kit	MX-260CR	Lower oil roller x 1 Lower CL roller x 1 Lower CL roller bearing x 2 Lower CL scraper x 1	100K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR x 1	100K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR x 1	100K	10	
PTC kit	MX-230CU	PTC unit x 1	100K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3 x 1	300K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit x 1	100K	10	
Filter kit	MX-C31FL	Ozone filter x 1	100K	10	
Main charger kit	MX-360MK	Main charger unit x 1 Cleaning gum AS AR x 1 Cleaning blade AR x 1	Black: 100K Color: 60K	10	
Staple cartridge	MX-SCX1	Staple cartridge x 3	5000 times x 3	20	For inner finisher (MX-FN17)
Finish stamp cartridge	AR-SV1	Finish stamp cartridge x 2	—	20	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2) x 1	50K	5	5% coverage for each color; 25% color ratio
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation) x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation) x 1	—	1	
Fusing unit	MX-260FU1	Fusing unit (For servicing rotation: Heater lamp 120V) x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

(2) Europe, Eastern Europe, Russia, Australia, New Zealand

Item	Model name	Content	Life	Quantity in collective package	Remarks
Fusing belt kit	MX-360FB	Fusing belt x 1 Fuser belt guide collar x 2	200K	10	
Pressure roller kit	MX-230LH	Fusing roller x 1 Pressure roller x 1	200K	10	

Item	Model name	Content	Life	Quantity in collective package	Remarks
Fusing cleaning kit	MX-230CR	Lower oil roller x 1 Lower CL roller x 1 Lower CL roller bearing x 2 Lower CL scraper x 1	100K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR x 1	100K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR x 1	100K	10	
PTC kit	MX-230CU	PTC unit x 1	100K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3 x 1	300K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit x 1	100K	10	
Filter kit	MX-C31FL	Ozone filter x 1	100K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2) x 1	50K	5	5% coverage for each color; 25% color ratio
Main charger kit	MX-230MK	Main charger unit x 1 Cleaning gum AS AR x 1 Cleaning blade AR x 1	Black: 100K Color: 60K	10	
Staple cartridge	MX-SCX1	Staple cartridge x 3	5000 times x 3	20	For inner finisher (MX-FN17)
Finish stamp cartridge	AR-SV1	Finish stamp cartridge x 2	—	20	
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation) x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation) x 1	—	1	
Fusing unit	MX-260FU	Fusing unit (For servicing rotation: Heater lamp 230V) x 1	—	1	
Fusing unit	MX-260FU2	Fusing unit (For servicing rotation: Heater lamp 110V) x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

(3) Asia, Middle East

Item	Model name	Content	Life	Quantity in collective package	Remarks
Fusing belt kit	MX-360FB	Fusing belt x 1 Fuser belt guide collar x 2	200K	10	
Pressure roller kit	MX-230LH	Fusing roller x 1 Pressure roller x 1	200K	10	
Fusing cleaning kit	MX-230CR	Lower oil roller x 1 Lower CL roller x 1 Lower CL roller bearing x 2 Lower CL scraper x 1	100K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR x 1	100K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR x 1	100K	10	
PTC kit	MX-230CU	PTC unit x 1	100K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3 x 1	300K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit x 1	100K	10	
Filter kit	MX-C31FL	Ozone filter x 1	100K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2) x 1	50K	5	5% coverage for each color; 25% color ratio
Main charger kit	MX-230MK	Main charger unit x 1 Cleaning gum AS AR x 1 Cleaning blade AR x 1	Black: 100K Color: 60K	10	
Staple cartridge	MX-SCX1	Staple cartridge x 3	5000 times x 3	20	For inner finisher (MX-FN17)
Finish stamp cartridge	AR-SV1	Finish stamp cartridge x 2	—	20	
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation) x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation) x 1	—	1	
Fusing unit	MX-260FU	Fusing unit (For servicing rotation: Heater lamp 230V) x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

(4) Hong Kong

Item	Model name	Content		Life	Quantity in collective package	Remarks
Fusing belt kit	MX-360FB	Fusing belt Fuser belt guide collar	x 1 x 2	200K	10	
Pressure roller kit	MX-230LH	Fusing roller Pressure roller	x 1 x 1	200K	10	
Fusing cleaning kit	MX-230CR	Lower oil roller Lower CL roller Lower CL roller bearing Lower CL scraper	x 1 x 1 x 2 x 1	100K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR	x 1	100K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR	x 1	100K	10	
PTC kit	MX-230CU	PTC unit	x 1	100K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3	x 1	300K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit	x 1	100K	10	
Filter kit	MX-C31FL	Ozone filter	x 1	100K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2)	x 1	50K	5	5% coverage for each color; 25% color ratio
Main charger kit	MX-230MK	Main charger unit Cleaning gum AS AR Cleaning blade AR	x 1 x 1 x 1	Black: 100K Color: 60K	10	
Staple cartridge	MX-SCX1	Staple cartridge	x 3	5000 times x 3	20	For inner finisher (MX-FN17)
Finish stamp cartridge	AR-SV1	Finish stamp cartridge	x 2	—	20	
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation)	x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation)	x 1	—	1	
Fusing unit	MX-260FU	Fusing unit (For servicing rotation: Heater lamp 230V)	x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

Note

The numbers in the column of "Quantity in collective package" in the above list indicate the quantities for one package shipped from the factory. Since, however, the products are treated as one piece or one set, their model names and necessary quantities must be specified when ordering. Pay attention to that.

E. 26cpm/31cpm(A) machine

(1) North America, Middle America, South America

Item	Model name	Content		Life	Quantity in collective package	Remarks
Fusing belt kit	MX-360FB	Fusing belt Fuser belt guide collar	x 1 x 2	200K	10	
Pressure roller kit	MX-230LH	Fusing roller Pressure roller	x 1 x 1	200K	10	
Fusing cleaning kit	MX-230CR	Lower oil roller Lower CL roller Lower CL roller bearing Lower CL scraper	x 1 x 1 x 2 x 1	100K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR	x 1	100K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR	x 1	100K	10	
PTC kit	MX-230CU	PTC unit	x 1	100K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3	x 1	300K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit	x 1	100K	10	
Filter kit	MX-C31FL	Ozone filter	x 1	100K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2)	x 1	50K	5	5% coverage for each color; 25% color ratio
Main charger kit	MX-360MK	Main charger unit Cleaning gum AS AR Cleaning blade AR	x 1 x 1 x 1	Black: 100K Color: 60K	10	
Staple cartridge	AR-SC3	Staple cartridge	x 3	2000 times x 3	40	For saddle finisher (MX-FN10)
Staple cartridge	MX-SCX1	Staple cartridge	x 3	5000 times x 3	20	For saddle finisher (MX-FN10) and inner finisher (MX-FN17)
Finish stamp cartridge	AR-SV1	Finish stamp cartridge	x 2	—	20	

Item	Model name	Content	Life	Quantity in collective package	Remarks
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation) x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation) x 1	—	1	
Fusing unit	MX-260FU1	Fusing unit (For servicing rotation: Heater lamp 120V) x 1	—	1	
Fusing unit	MX-260FU	Fusing unit (For servicing rotation: Heater lamp 230V) x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

(2) Europe, Eastern Europe, Russia, Australia, New Zealand

Item	Model name	Content	Life	Quantity in collective package	Remarks
Fusing belt kit	MX-360FB	Fusing belt x 1 Fuser belt guide collar x 2	200K	10	
Pressure roller kit	MX-230LH	Fusing roller x 1 Pressure roller x 1	200K	10	
Fusing cleaning kit	MX-230CR	Lower oil roller x 1 Lower CL roller x 1 Lower CL roller bearing x 2 Lower CL scraper x 1	100K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR x 1	100K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR x 1	100K	10	
PTC kit	MX-230CU	PTC unit x 1	100K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3 x 1	300K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit x 1	100K	10	
Filter kit	MX-C31FL	Ozone filter x 1	100K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2) x 1	50K	5	5% coverage for each color; 25% color ratio
Main charger kit	MX-230MK	Main charger unit x 1 Cleaning gum AS AR x 1 Cleaning blade AR x 1	Black: 100K Color: 60K	10	
Staple cartridge	AR-SC3	Staple cartridge x 3	2000 times x 3	40	For MX-FN10 (saddle staple)
Staple cartridge	MX-SCX1	Staple cartridge x 3	5000 times x 3	20	For MX-FN10/FN17
Finish stamp cartridge	AR-SV1	Finish stamp cartridge x 2	—	20	
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation) x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation) x 1	—	1	
Fusing unit	MX-260FU	Fusing unit (For servicing rotation: Heater lamp 230V) x 1	—	1	
Fusing unit	MX-260FU2	Fusing unit (For servicing rotation: Heater lamp 110V) x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

(3) Asia, Middle East

Item	Model name	Content	Life	Quantity in collective package	Remarks
Fusing belt kit	MX-360FB	Fusing belt x 1 Fuser belt guide collar x 2	200K	10	
Pressure roller kit	MX-230LH	Fusing roller x 1 Pressure roller x 1	200K	10	
Fusing cleaning kit	MX-230CR	Lower oil roller x 1 Lower CL roller x 1 Lower CL roller bearing x 2 Lower CL scraper x 1	100K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR x 1	100K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR x 1	100K	10	
PTC kit	MX-230CU	PTC unit x 1	100K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3 x 1	300K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit x 1	100K	10	
Filter kit	MX-C31FL	Ozone filter x 1	100K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2) x 1	50K	5	5% coverage for each color; 25% color ratio

Item	Model name	Content		Life	Quantity in collective package	Remarks
Main charger kit	MX-230MK	Main charger unit Cleaning gum AS AR Cleaning blade AR	x 1 x 1 x 1	Black: 100K Color: 60K	10	
Staple cartridge	AR-SC3	Staple cartridge	x 3	2000 times x 3	40	For MX-FN10 (saddle staple)
Staple cartridge	MX-SCX1	Staple cartridge	x 3	5000 times x 3	20	For MX-FN10/FN17
Finish stamp cartridge	AR-SV1	Finish stamp cartridge	x 2	—	20	
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation)	x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation)	x 1	—	1	
Fusing unit	MX-260FU1	Fusing unit (For servicing rotation: Heater lamp 120V)	x 1	—	1	
Fusing unit	MX-260FU	Fusing unit (For servicing rotation: Heater lamp 230V)	x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

(4) Hong Kong

Item	Model name	Content		Life	Quantity in collective package	Remarks
Fusing belt kit	MX-360FB	Fusing belt Fuser belt guide collar	x 1 x 2	200K	10	
Pressure roller kit	MX-230LH	Fusing roller Pressure roller	x 1 x 1	200K	10	
Fusing cleaning kit	MX-230CR	Lower oil roller Lower CL roller Lower CL roller bearing Lower CL scraper	x 1 x 1 x 2 x 1	100K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR	x 1	100K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR	x 1	100K	10	
PTC kit	MX-230CU	PTC unit	x 1	100K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3	x 1	300K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit	x 1	100K	10	
Filter kit	MX-C31FL	Ozone filter	x 1	100K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2)	x 1	50K	5	5% coverage for each color; 25% color ratio
Main charger kit	MX-230MK	Main charger unit Cleaning gum AS AR Cleaning blade AR	x 1 x 1 x 1	Black: 100K Color: 60K	10	
Staple cartridge	AR-SC3	Staple cartridge	x 3	2000 times x 3	40	For MX-FN10 (saddle staple)
Staple cartridge	MX-SCX1	Staple cartridge	x 3	5000 times x 3	20	For MX-FN10/FN17
Finish stamp cartridge	AR-SV1	Finish stamp cartridge	x 2	—	20	
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation)	x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation)	x 1	—	1	
Fusing unit	MX-260FU	Fusing unit (For servicing rotation: Heater lamp 230V)	x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

Note

The numbers in the column of "Quantity in collective package" in the above list indicate the quantities for one package shipped from the factory. Since, however, the products are treated as one piece or one set, their model names and necessary quantities must be specified when ordering. Pay attention to that.

F. 36cpm machine

(1) North America, Middle America, South America

Item	Model name	Content		Life	Quantity in collective package	Remarks
Fusing belt kit	MX-360FB	Fusing belt Fuser belt guide collar	x 1 x 2	240K	10	
Pressure roller kit	MX-230LH	Fusing roller Pressure roller	x 1 x 1	240K	10	
Web cleaning kit	MX-360WB	Web roller Web guide shaft Web pressure roller Web pressure roller bearing	x 1 x 2 x 1 x 2	120K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR	x 1	120K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR	x 1	120K	10	
PTC kit	MX-230CU	PTC unit	x 1	120K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3	x 1	360K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit	x 1	120K	10	
Filter kit	MX-C31FL	Ozone filter	x 1	120K	10	
Main charger kit	MX-360MK	Main charger unit Cleaning gum AS AR Cleaning blade AR	x 1 x 1 x 1	Black: 120K Color: 70K	10	
Staple cartridge	AR-SC3	Staple cartridge	x 3	2000 times x 3	40	For saddle finisher (MX-FN10)
Staple cartridge	MX-SCX1	Staple cartridge	x 3	5000 times x 3	20	For saddle finisher (MX-FN10) and inner finisher (MX-FN17)
Finish stamp cartridge	AR-SV1	Finish stamp cartridge	x 2	—	20	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2)	x 1	50K	5	5% coverage for each color; 25% color ratio
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation)	x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation)	x 1	—	1	
Fusing unit	MX-360FU1	Fusing unit (For servicing rotation: Heater lamp 120V)	x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

(2) Europe, Eastern Europe, Russia, Australia, New Zealand

Item	Model name	Content		Life	Quantity in collective package	Remarks
Fusing belt kit	MX-360FB	Fusing belt Fuser belt guide collar	x 1 x 2	240K	10	
Pressure roller kit	MX-230LH	Fusing roller Pressure roller	x 1 x 1	240K	10	
Web cleaning kit	MX-360WB	Web roller Web guide shaft Web pressure roller Web pressure roller bearing	x 1 x 2 x 1 x 2	120K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR	x 1	120K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR	x 1	120K	10	
PTC kit	MX-230CU	PTC unit	x 1	120K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3	x 1	360K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit	x 1	120K	10	
Filter kit	MX-C31FL	Ozone filter	x 1	120K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2)	x 1	50K	5	5% coverage for each color; 25% color ratio
Main charger kit	MX-230MK	Main charger unit Cleaning gum AS AR Cleaning blade AR	x 1 x 1 x 1	Black: 120K Color: 70K	10	
Staple cartridge	AR-SC3	Staple cartridge	x 3	2000 times x 3	40	For MX-FN10 (saddle staple)
Staple cartridge	MX-SCX1	Staple cartridge	x 3	5000 times x 3	20	For MX-FN10/FN17
Finish stamp cartridge	AR-SV1	Finish stamp cartridge	x 2	—	20	
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation)	x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation)	x 1	—	1	
Fusing unit	MX-360FU	Fusing unit (For servicing rotation: Heater lamp 230V)	x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

(3) Asia, Middle East

Item	Model name	Content	Life	Quantity in collective package	Remarks
Fusing belt kit	MX-360FB	Fusing belt x 1 Fuser belt guide collar x 2	240K	10	
Pressure roller kit	MX-230LH	Fusing roller x 1 Pressure roller x 1	240K	10	
Web cleaning kit	MX-360WB	Web roller x 1 Web guide shaft x 2 Web pressure roller x 1 Web pressure roller bearing x 2	120K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR x 1	120K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR x 1	120K	10	
PTC kit	MX-230CU	PTC unit x 1	120K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3 x 1	360K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit x 1	120K	10	
Filter kit	MX-C31FL	Ozone filter x 1	120K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2) x 1	50K	5	5% coverage for each color; 25% color ratio
Main charger kit	MX-230MK	Main charger unit x 1 Cleaning gum AS AR x 1 Cleaning blade AR x 1	Black: 120K Color: 70K	10	
Staple cartridge	AR-SC3	Staple cartridge x 3	2000 times x 3	40	For MX-FN10 (saddle staple)
Staple cartridge	MX-SCX1	Staple cartridge x 3	5000 times x 3	20	For MX-FN10/FN17
Finish stamp cartridge	AR-SV1	Finish stamp cartridge x 2	—	20	
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation) x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation) x 1	—	1	
Fusing unit	MX-360FU	Fusing unit (For servicing rotation: Heater lamp 230V) x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.
Model name: Composed of the parts of 1 set

(4) Hong Kong

Item	Model name	Content	Life	Quantity in collective package	Remarks
Fusing belt kit	MX-360FB	Fusing belt x 1 Fuser belt guide collar x 2	240K	10	
Pressure roller kit	MX-230LH	Fusing roller x 1 Pressure roller x 1	240K	10	
Web cleaning kit	MX-360WB	Web roller x 1 Web guide shaft x 2 Web pressure roller x 1 Web pressure roller bearing x 2	120K	10	
Primary transfer belt kit	MX-230B1	Primary transfer belt AR x 1	120K	10	
Primary transfer blade kit	MX-230TL	Primary transfer blade AR x 1	120K	10	
PTC kit	MX-230CU	PTC unit x 1	120K	10	
Secondary transfer belt kit	MX-230B2	Secondary transfer belt D3 x 1	360K	10	
PS paper dust removing unit	MX-230PD	PS paper dust removing unit x 1	120K	10	
Filter kit	MX-C31FL	Ozone filter x 1	120K	10	
Toner collection container	MX-230HB	Toner collection container (with LSU cleaner x 2) x 1	50K	5	5% coverage for each color; 25% color ratio
Main charger kit	MX-230MK	Main charger unit x 1 Cleaning gum AS AR x 1 Cleaning blade AR x 1	Black: 120K Color: 70K	10	
Staple cartridge	AR-SC3	Staple cartridge x 3	2000 times x 3	40	For MX-FN10 (saddle staple)
Staple cartridge	MX-SCX1	Staple cartridge x 3	5000 times x 3	20	For MX-FN10/FN17
Finish stamp cartridge	AR-SV1	Finish stamp cartridge x 2	—	20	

Item	Model name	Content	Life	Quantity in collective package	Remarks
Primary transfer belt unit	MX-230U1	Primary transfer belt unit (For servicing rotation) x 1	—	1	
Secondary transfer belt unit	MX-230U2	Secondary transfer belt unit (For servicing rotation) x 1	—	1	
Fusing unit	MX-360FU	Fusing unit (For servicing rotation: Heater lamp 230V) x 1	—	1	

Note

When shipping, the parts are packed in the unit of 10 sets. In the market, however, they are treated in the unit of 1 set.

Model name: Composed of the parts of 1 set

Note

The numbers in the column of "Quantity in collective package" in the above list indicate the quantities for one package shipped from the factory. Since, however, the products are treated as one piece or one set, their model names and necessary quantities must be specified when ordering. Pay attention to that.

3. Definition of developer/drum life end

When the developer/drum counter reaches the specified count.

When the developer/drum rpm reaches the specified count.

When either of the above reach the specified count, it is judged as life end.

In an actual case, the ratio of monochrome output and color output may differ greatly.

When data of mixed documents (monochrome and color) are output, monochrome document data may be output in the color mode in order to prevent against fall in the job efficiency. (ACS auto color selection).

In addition, when correction or warm-up operation is performed as well as output operation, the developer and the drum rotates.

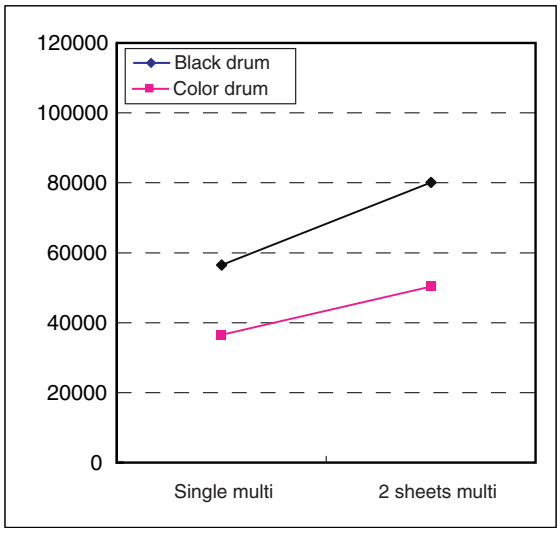
Therefore, the developer/drum consuming level cannot be determined only by the copy/print quantity. When, therefore, the rpm reaches the specified amount, it is judged as life end.

To check the developer/drum life, use SIM22-13.

A. 18cpm machine

	Developer/drum counter		Developer/drum rpm	
	B/W	Full color	B/W	Full color
Developer/ drum	80K	50K	840K rotations	840K rotations

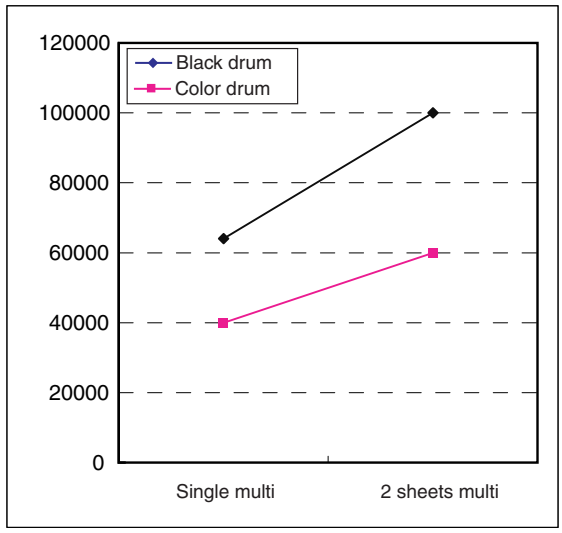
Kind of multi	Black drum	Color drum
Single multi	58000	38000
2 sheets multi	80000	50000



B. 20cpm machine

	Developer/drum counter		Developer/drum rpm	
	B/W	Full color	B/W	Full color
Developer/ drum	100K	60K	840K rotations	840K rotations

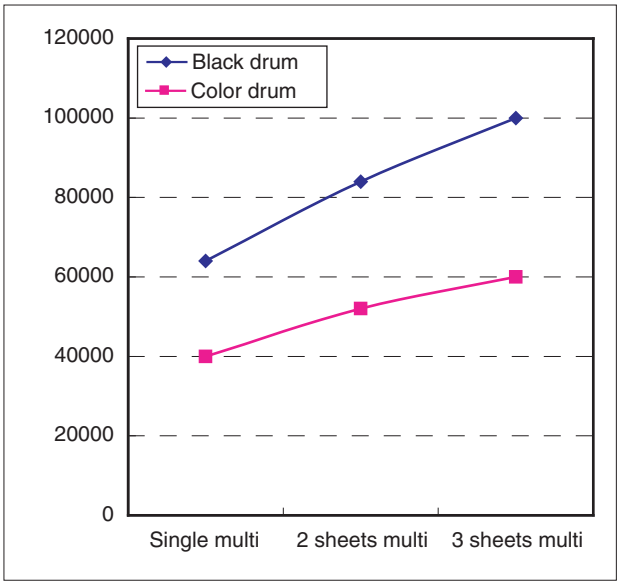
Kind of multi	Black drum	Color drum
Single multi	64000	40000
2 sheets multi	100000	60000



C. 23cpm machine

	Developer/drum counter		Developer/drum rpm	
	B/W	Full color	B/W	Full color
Developer/ drum	100K	60K	840K rotations	840K rotations

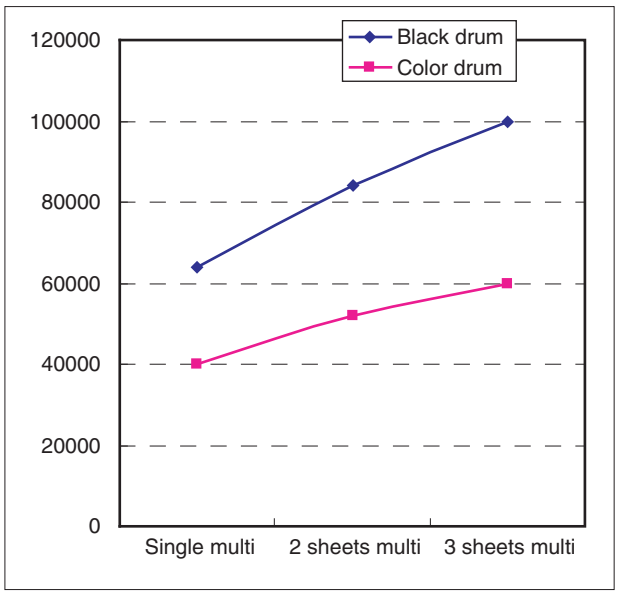
Kind of multi	Black drum	Color drum
Single multi	64000	40000
2 sheets multi	84000	52000
3 sheets multi	100000	60000



D. 26cpm machine

	Developer/drum counter		Developer/drum rpm	
	B/W	Full color	B/W	Full color
Developer/ drum	100K	60K	840K rotations	840K rotations

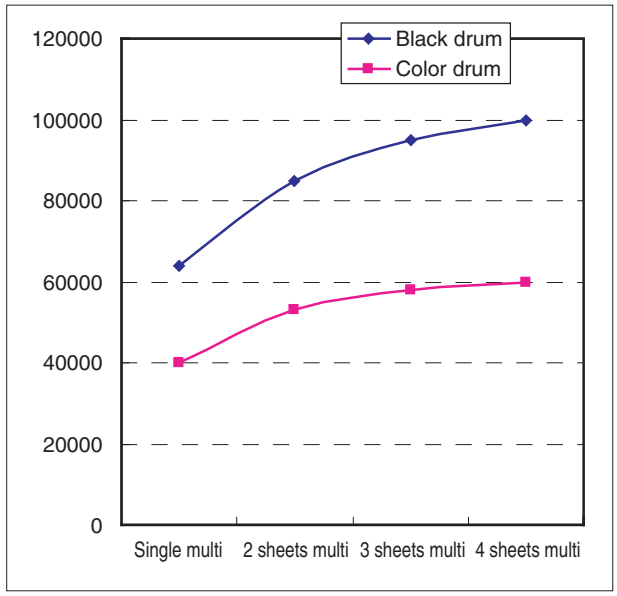
Kind of multi	Black drum	Color drum
Single multi	64000	40000
2 sheets multi	84000	52000
3 sheets multi	100000	60000



E. 31cpm machine

	Developer/drum counter		Developer/drum rpm	
	B/W	Full color	B/W	Full color
Developer/ drum	100K	60K	840K rotations	840K rotations

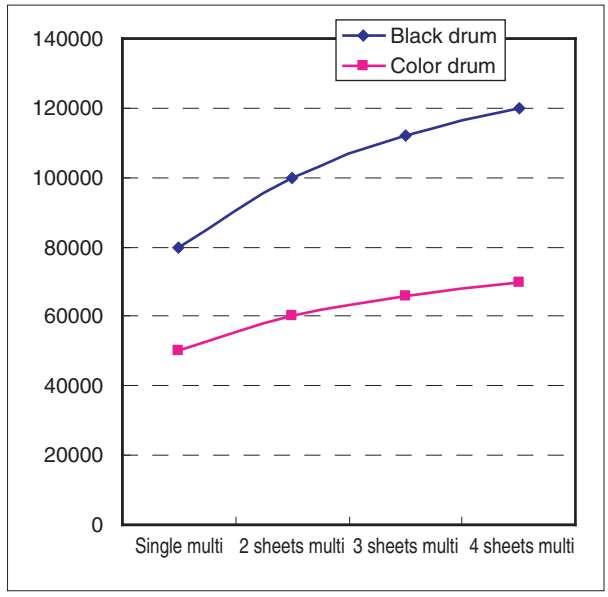
Kind of multi	Black drum	Color drum
Single multi	64000	40000
2 sheets multi	85000	53000
3 sheets multi	95000	58000
4 sheets multi	100000	60000



F. 36cpm machine

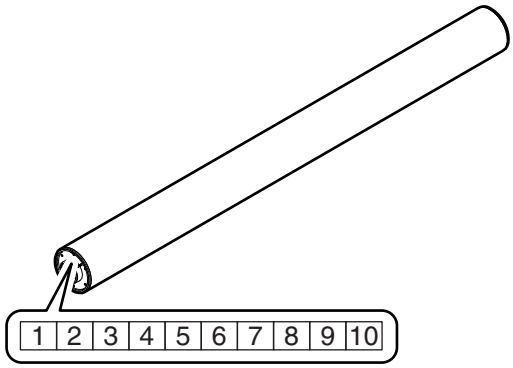
	Developer/drum counter		Developer/drum rpm	
	B/W	Full color	B/W	Full color
Developer/ drum	120K	70K	840K rotations	840K rotations

Kind of multi	Black drum	Color drum
Single multi	80000	50000
2 sheets multi	100000	60000
3 sheets multi	112000	66000
4 sheets multi	120000	70000



4. Production number identification

A. OPC drum



The lot number is comprised of 10 digits. Each digit indicates the content as follows.

The number is printed on the flange on the front side.

1: Number
For this model, this digit is 2.

2: Alphabet
Indicates the model conformity code.

3: Number
Indicates the end digit of the production year.

4: Number or X, Y, Z
Indicates the production month.
X stands for October, Y November, and Z December.

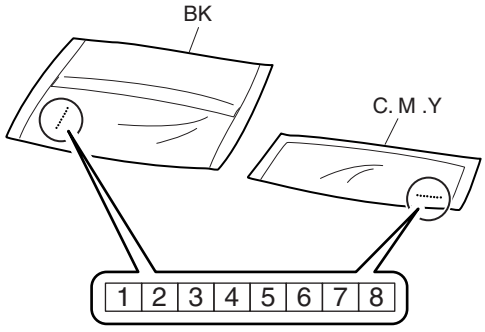
5/6: Number
Indicates the day of the production date.
X stands for October, Y November, and Z December.

7: Number
Indicates the day of the month of packing.
X stands for October, Y November, and Z December.

8/9: Number
Indicates the day of the packing date.

10: Alphabet
Indicates the production factory.

B. Developer



The lot number is 8 digits in length. Each digit indicates the content as follows.

The number is printed on the right under side of the back surface of the developer bag.

1: Alphabet
Indicates the production factory.

2: Number
Indicates the production year.

3/4: Number
Indicates the production month.

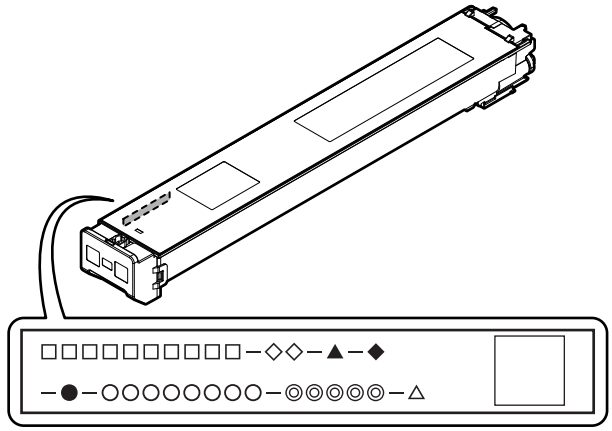
5/6: Number
Indicates the production day.

7: Hyphen

8: Number
Indicates the production lot.

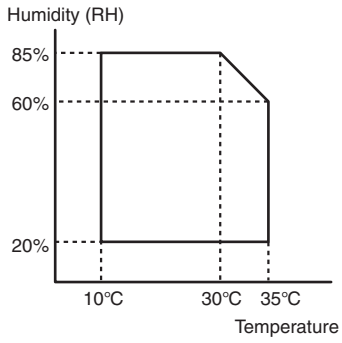
C. Toner cartridge

The label indicating the management number is attached to the side of the toner cartridge.



□: Unit code/Model name
◇: Color code (Black: BK /Cyan: CY /Magenta: MA /Yellow: YE)
▲: Destination
◆: Skating
●: Production place
○: Production date (YYYYMMDD)
◎: Serial number
△: Version number

5. Environmental conditions

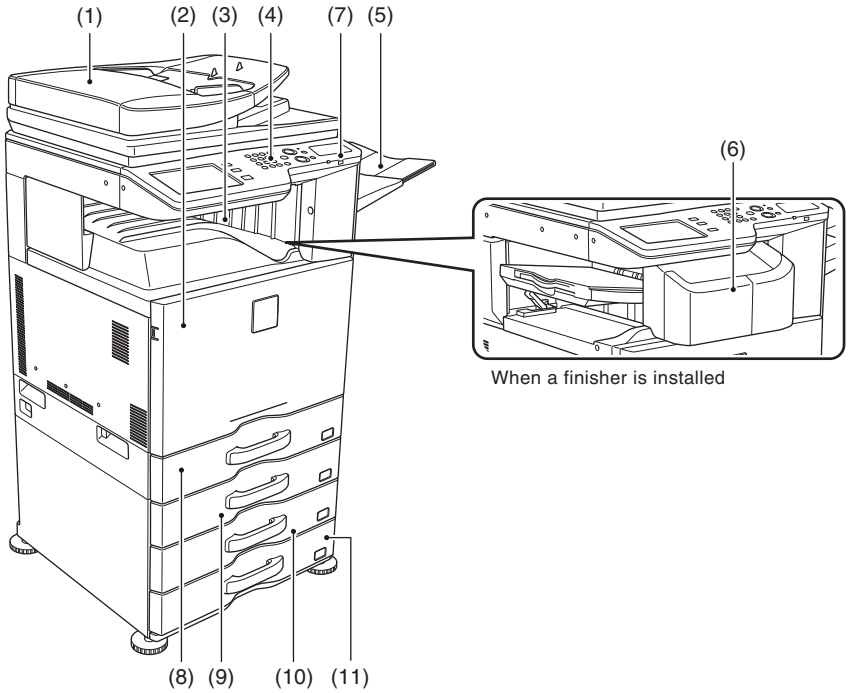


Standard environmental conditions	Temperature	20 – 25 °C
	Humidity	65 ± 5 %RH
Usage environmental conditions	Temperature	10 – 35 °C
	Humidity	20 – 85 %RH
Storage period	Toner/Developer: 24 months from the manufactured month (Production lot) under unsealed state Drum: 36 months from the manufactured month under unsealed state	

[3] EXTERNAL VIEW AND INTERNAL STRUCTURE

1. External view

A. 18cpm/20cpm/23cpm/31cpm(G) machine

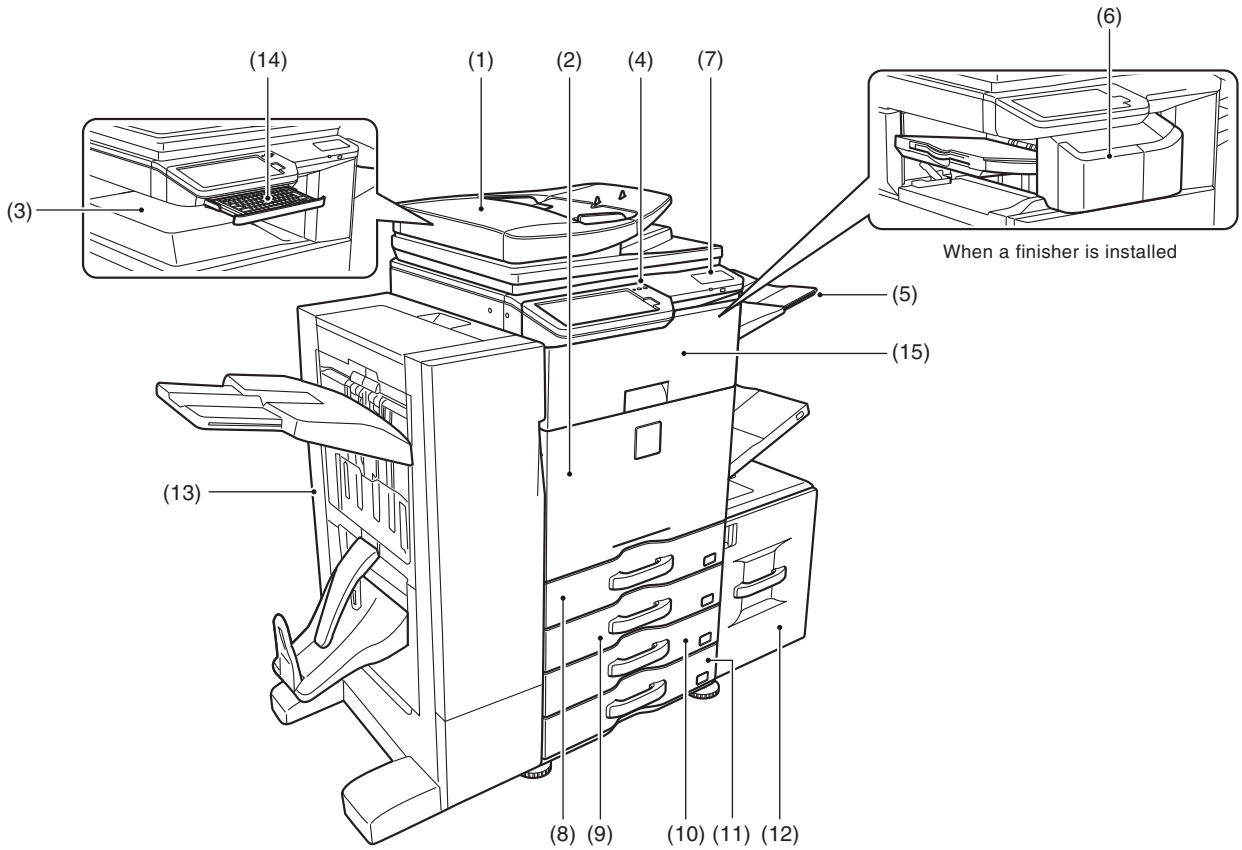


No.	Name	Function/Operation
1	Reversing single pass feeder	This automatically feeds and scans multiple originals. Both sides of 2-sided originals can be automatically scanned.
2	Front cover	Open this cover to switch the main power switch to "On" or "Off" or to replace a toner cartridge.
3	Output tray (center tray)	Output is delivered to this tray.
4	Operation panel	This is used to select functions and enter the number of copies.
5	Exit tray unit (right exit tray)*1, *2	When installed, output can be delivered to this tray.
6	Finisher*1, *2	This can be used to staple output. A punch module can also be installed to punch holes in output.
7	USB connector (A type)*2	Supports USB 2.0 (Hi-Speed). This is used to connect a USB device such as USB memory to the machine. For the USB cable, use a shielded cable.
8	Tray 1	This holds paper.
9	Tray 2 (when a paper drawer is installed)*	This holds paper.
10	Tray 3 (when a paper drawer is installed)*	This holds paper.
11	Tray 4 (when a paper drawer is installed)*	This holds paper.

*1: Peripheral device.

*2: 18cpm machine are not installed.

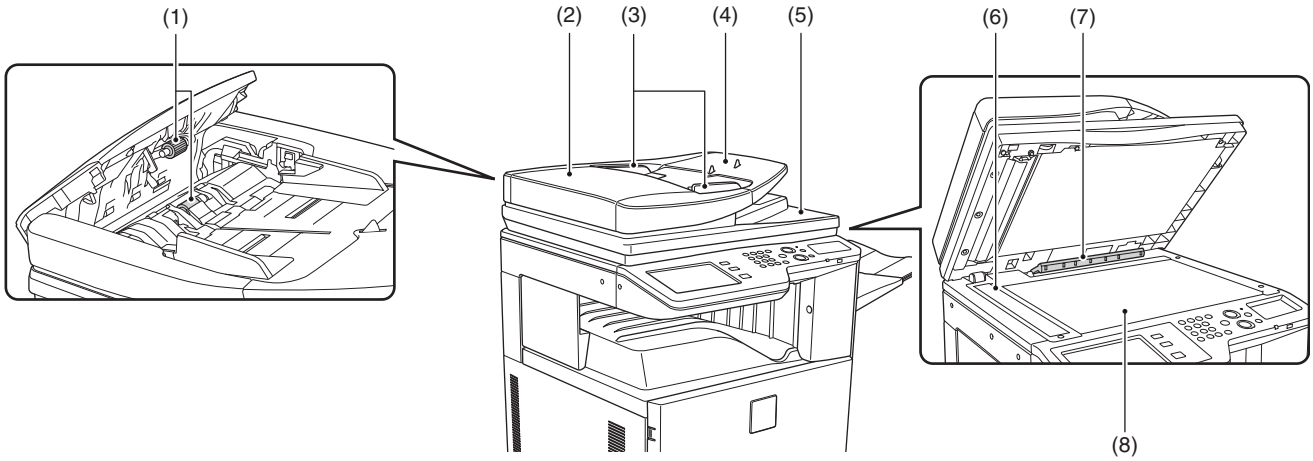
B. 26cpm/36cpm/31cpm(A) machine



No.	Name	Function/Operation
1	Reversing single pass feeder	This automatically feeds and scans multiple originals. Both sides of 2-sided originals can be automatically scanned.
2	Front cover	Open this cover to switch the main power switch to "On" or "Off" or to replace a toner cartridge.
3	Output tray (center tray)	Output is delivered to this tray.
4	Operation panel	This is used to select functions and enter the number of copies.
5	Exit tray unit (right exit tray)*	When installed, output can be delivered to this tray.
6	Finisher*	This can be used to staple output. A punch module can also be installed to punch holes in output.
7	USB connector (A type)	Supports USB 2.0 (Hi-Speed). This is used to connect a USB device such as USB memory to the machine. For the USB cable, use a shielded cable.
8	Tray 1	This holds paper.
9	Tray 2 (when a paper drawer is installed)*	This holds paper.
10	Tray 3 (when a paper drawer is installed)*	This holds paper.
11	Tray 4 (when a paper drawer is installed)*	This holds paper.
12	Tray 5 (when a large capacity tray is installed)*	This holds paper.
13	Saddle stitch finisher*	This can be used to staple output. The saddle stitch function for folding and stapling output and the fold function for folding output in half are also available. A punch module can also be installed to punch holes in output.
14	Keyboard*	This is a keyboard that is incorporated into the machine. When not used, it can be stored under the operation panel.
15	Paper pass unit*	Transports paper to the finisher.

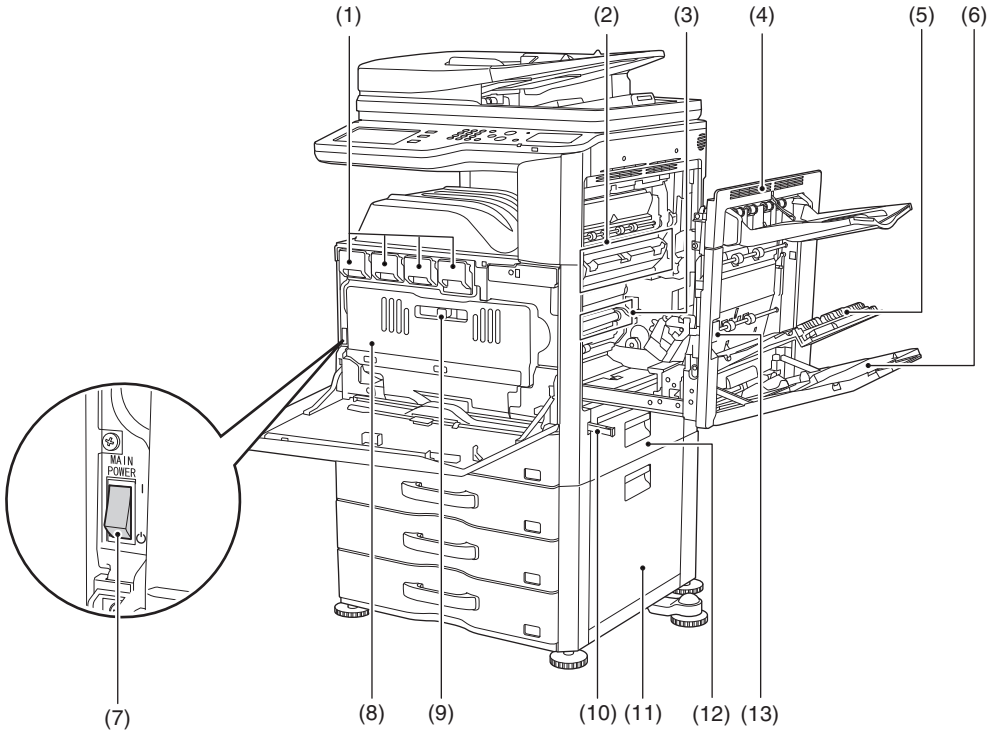
* Peripheral device.

C. Automatic document feeder and document glass



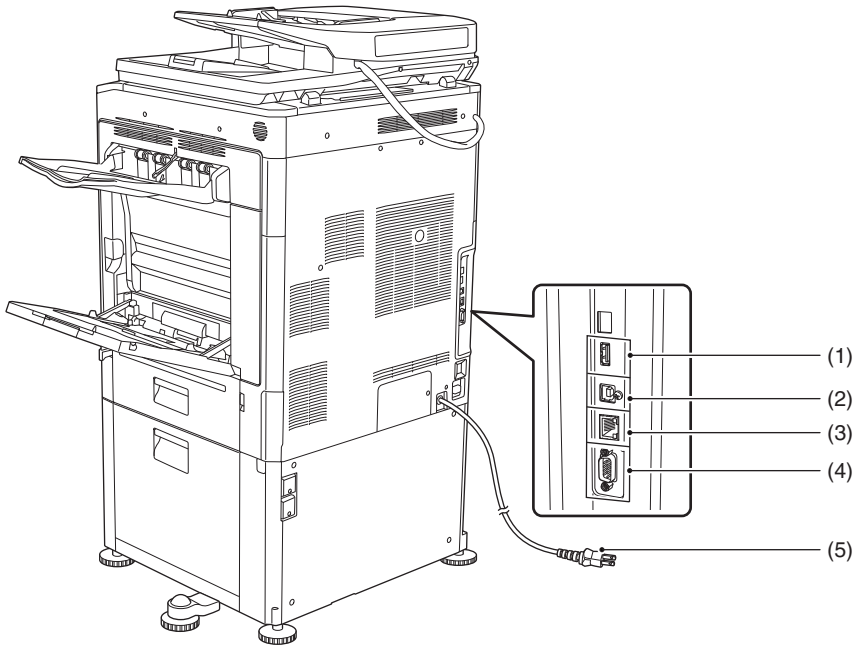
No.	Name	Function/Operation
1	Paper feed roller	This roller rotates to automatically feed the original.
2	Document feeding area cover	Open this cover to remove an original misfeed or clean the paper feed roller.
3	Original guides	These help ensure that the original is scanned correctly. Adjust the guides to the width of the original.
4	Document feeder tray	Place originals in this tray. 1-sided originals must be placed face up.
5	Original exit tray	Originals are delivered to this tray after scanning.
6	Scanning area	Originals placed in the document feeder tray are scanned here.
7	Original size detector	This detects the size of an original placed on the document glass.
8	Document glass	Use this to scan a book or other thick original that cannot be fed through the automatic document feeder.

2. Internal structure

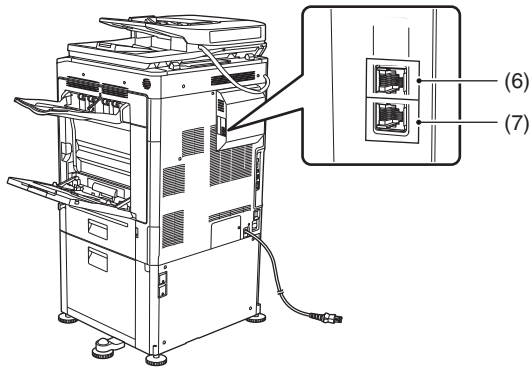


No.	Name	Function/Operation	Note
1	Toner cartridges	These contain toner for printing. When the toner runs out in a cartridge, the cartridge of the color that ran out must be replaced.	
2	Fusing unit	Heat is applied here to fuse the transferred image onto the paper.	Important The fusing unit is hot. Take care not to burn yourself when removing a paper misfeed.
3	Transfer belt	During full color printing, the toner images of each of the four colors on each of the photoconductive drums are combined together on the transfer belt. During black and white printing, only the black toner image is transferred onto the transfer belt.	Do not touch or damage the transfer belt. This may cause a defective image.
4	Right side cover	Open this cover to remove a misfeed.	
5	Paper reversing section cover	This is used when 2-sided printing is performed. Open this cover to remove a paper misfeed.	
6	Bypass tray	Use this tray to feed paper manually. When loading a large sheet of paper, be sure to pull out the bypass tray extension.	
7	Main power switch	This is used to power on the machine. When using the fax or Internet fax functions, keep this switch in the "on" position.	
8	Waste toner box	This collects excess toner that remains after printing.	
9	Waste toner box release lever	Move this lever when you need to release the waste toner box lock to replace the waste toner box or clean the laser unit.	
10	Handle	Pull this out and grasp it when moving the machine.	
11	Right cover of paper drawer (when a paper drawer is installed)	Open this to remove a paper misfeed in tray 2, tray 3 or tray 4.	
12	Paper tray right side cover	Open this to remove a paper misfeed in tray 1.	
13	Right side cover release lever	To remove a paper misfeed, pull and hold this lever up to open the right side cover.	

3. I/F connectors



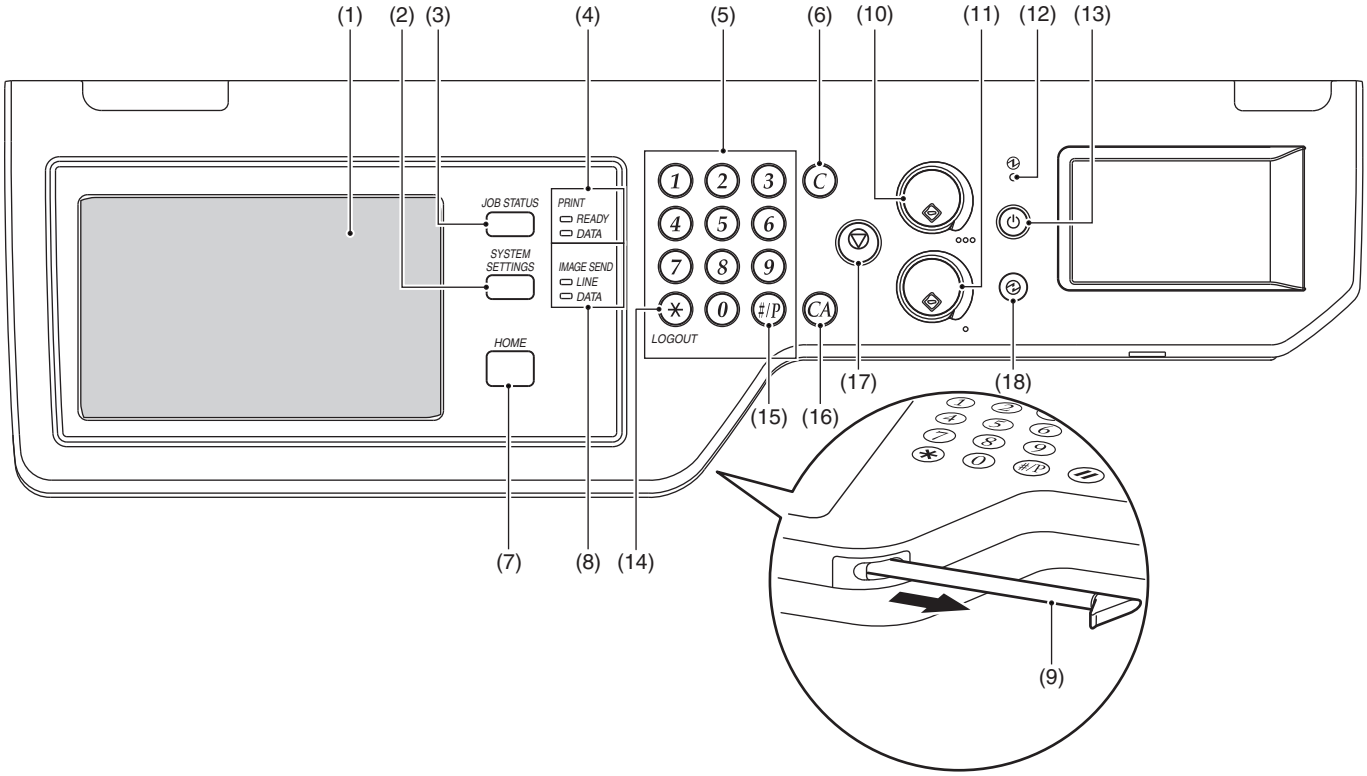
When the fax expansion kit is installed



No.	Name	Function/Operation
1	USB connector (A type)	Supports USB 2.0 (Hi-Speed). This is used to connect a USB device such as USB memory to the machine.
2	USB connector (B type)	Supports USB 2.0 (Hi-Speed). A computer can be connected to this connector to use the machine as a printer. For the USB cable, use a shielded cable.
3	LAN connector	Connect the LAN cable to this connector when the machine is used on a network. For the LAN cable, use a shielded type cable.
4	Service-only connector	Important This connector is for use only by service technicians. Connecting a cable to this connector may cause the machine to malfunction. Important note for service technicians: The cable connected to the service connector must be less than 3 m (118") in length.
5	Power plug	
6	Extension phone socket	When the fax function of the machine is used, an extension phone can be connected to this socket.
7	Telephone line socket	When the fax function of the machine is used, the telephone line is connected to this socket.

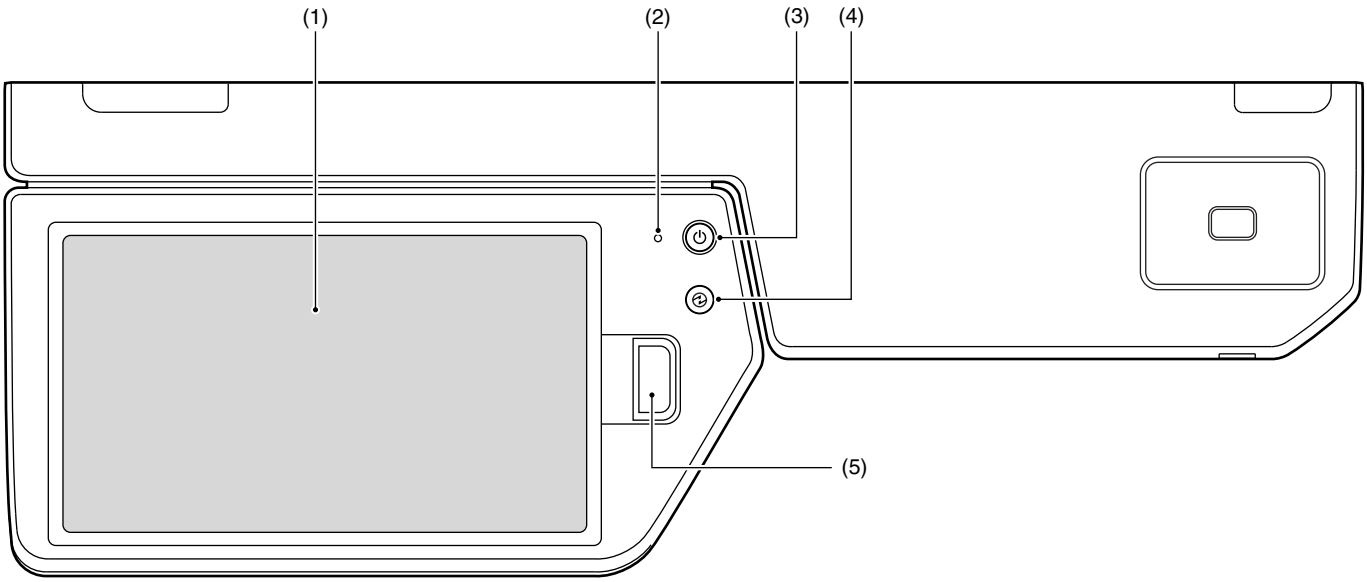
4. Operation panel

A. 18cpm/20cpm/23cpm/31cpm(G) machine



No.	Name	Function/Operation
1	Touch panel	Messages and keys appear in the touch panel display. Touch the displayed keys to perform a variety of operations. When a key is touched, a beep sounds and the selected item is highlighted. This provides confirmation as you perform an operation.
2	[SYSTEM SETTINGS] key	Press this key to display the system settings menu screen. The system settings are used to configure paper tray settings, store addresses for transmission operations, and adjust parameters to make the machine easier to use.
3	[JOB STATUS] key	Press this key to display the job status screen. The job status screen is used to check information on jobs and to cancel jobs.
4	PRINT mode indicators	• READY indicator Print jobs can be received when this indicator is lit. • DATA indicator This blinks while print data is being received and lights steadily while printing is taking place.
5	Numeric keys (10-key)	These are used to enter the number of copies, fax numbers, and other numerical values. These keys are also used to enter numeric value settings (except for the system settings).
6	[CLEAR] key (Ⓒ)	Press this key to return the number of copies to "0".
7	[HOME] key	Touch this key to display the home screen. Frequently used settings can be registered in the home screen to enable quick and easy operation of the machine.
8	IMAGE SEND mode indicators	• LINE indicator This lights up during transmission or reception of a fax or Internet fax. This also lights during transmission of an image in scan mode. • DATA indicator This blinks when a received fax or Internet fax cannot be printed because of a problem such as out of paper. This lights up when there is a transmission job that has not been sent.
9	Stylus pen	This can be used to touch a key displayed on the touch panel.
10	[COLOR START] key	Press this key to copy or scan an original in color. This key cannot be used for fax or Internet fax.
11	[BLACK & WHITE START] key	Press this key to copy or scan an original in black and white. This key is also used to send a fax in fax mode.
12	Main power indicator	This lights up when the machine's main power switch is in the "on" position.
13	[POWER] key (⏻)	Use this key to turn the machine power on and off.
14	[LOGOUT] key (✳)	Press this key to log out after you have logged in and used the machine. When using the fax function, this key can also be pressed to send tone signals on a pulse dial line.
15	[#/P] key (♯/P)	When using the copy function, press this key to use a job program. When using the fax function, this key can be used when dialling.
16	[CLEAR ALL] key (Ⓒ𝐴)	Press this key to return to the initial operation state. Use this key when you wish to cancel all settings that have been selected and start operation from the initial state.
17	[STOP] key (⊘)	Press this key to stop a copy job or scanning of an original.
18	[POWER SAVE] key (⏻) / indicator	Use this key to put the machine into auto power shut-off mode to save energy. The [POWER SAVE] key (⏻) blinks when the machine is in auto power shut-off mode.

B. 26cpm/36cpm/31cpm(A) machine

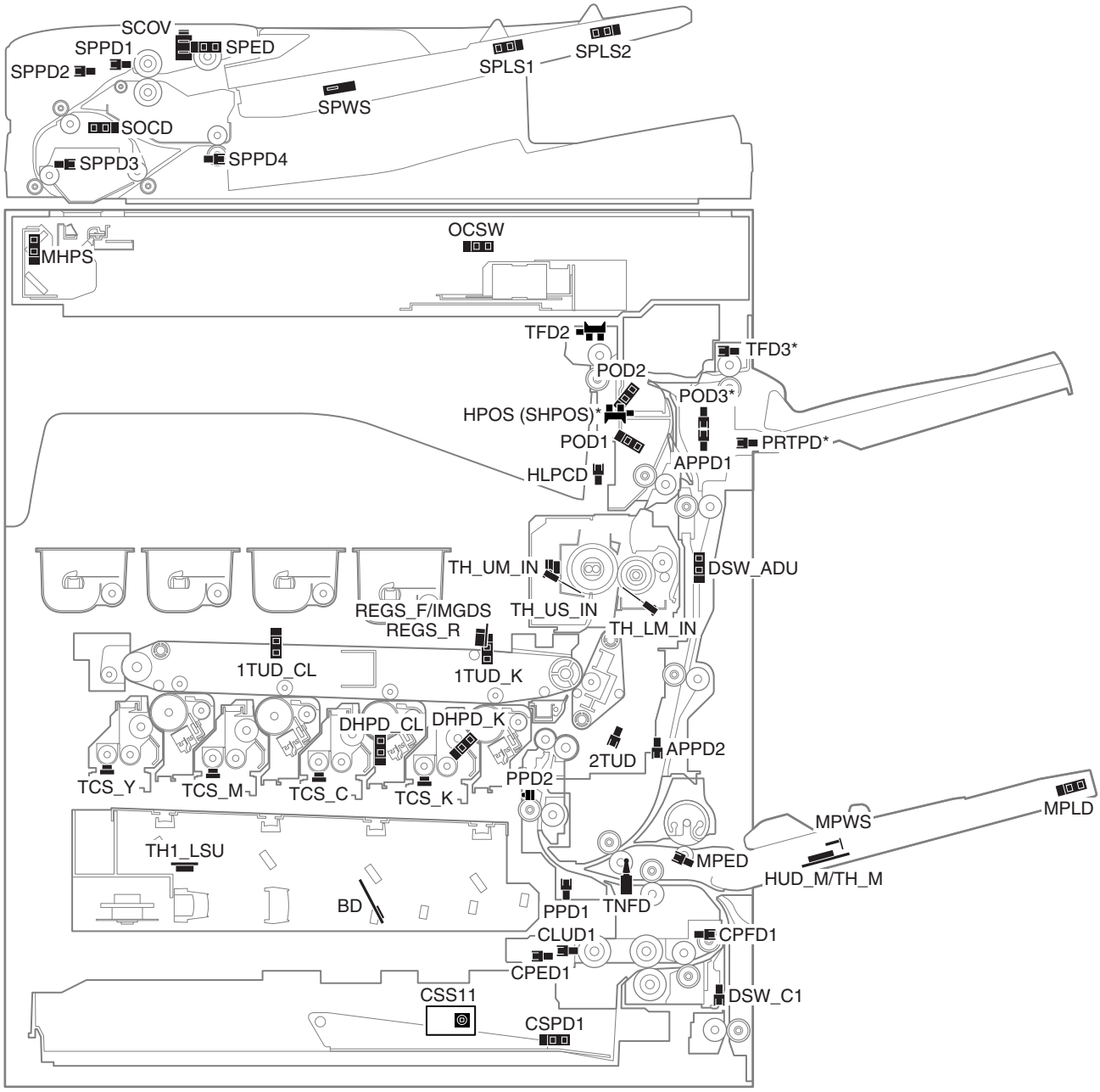


No.	Name	Function/Operation
1	Touch panel	Messages and keys appear in the touch panel display. Touch the displayed keys to perform a variety of operations. When a key is touched, a beep sounds and the selected item is highlighted. This provides confirmation as you perform an operation.
2	Main power indicator	This lights up when the machine's main power switch is in the "on" position.
3	[POWER] key (⏻)	Use this key to turn the machine power on and off.
4	[POWER SAVE] key (⏻) / indicator	Use this key to put the machine into auto power shut-off mode to save energy. The [POWER SAVE] key (⏻) blinks when the machine is in auto power shut-off mode.
5	[HOME] key / indicator	Touch this key to display the home screen. Frequently used settings can be registered in the home screen to enable quick and easy operation of the machine.

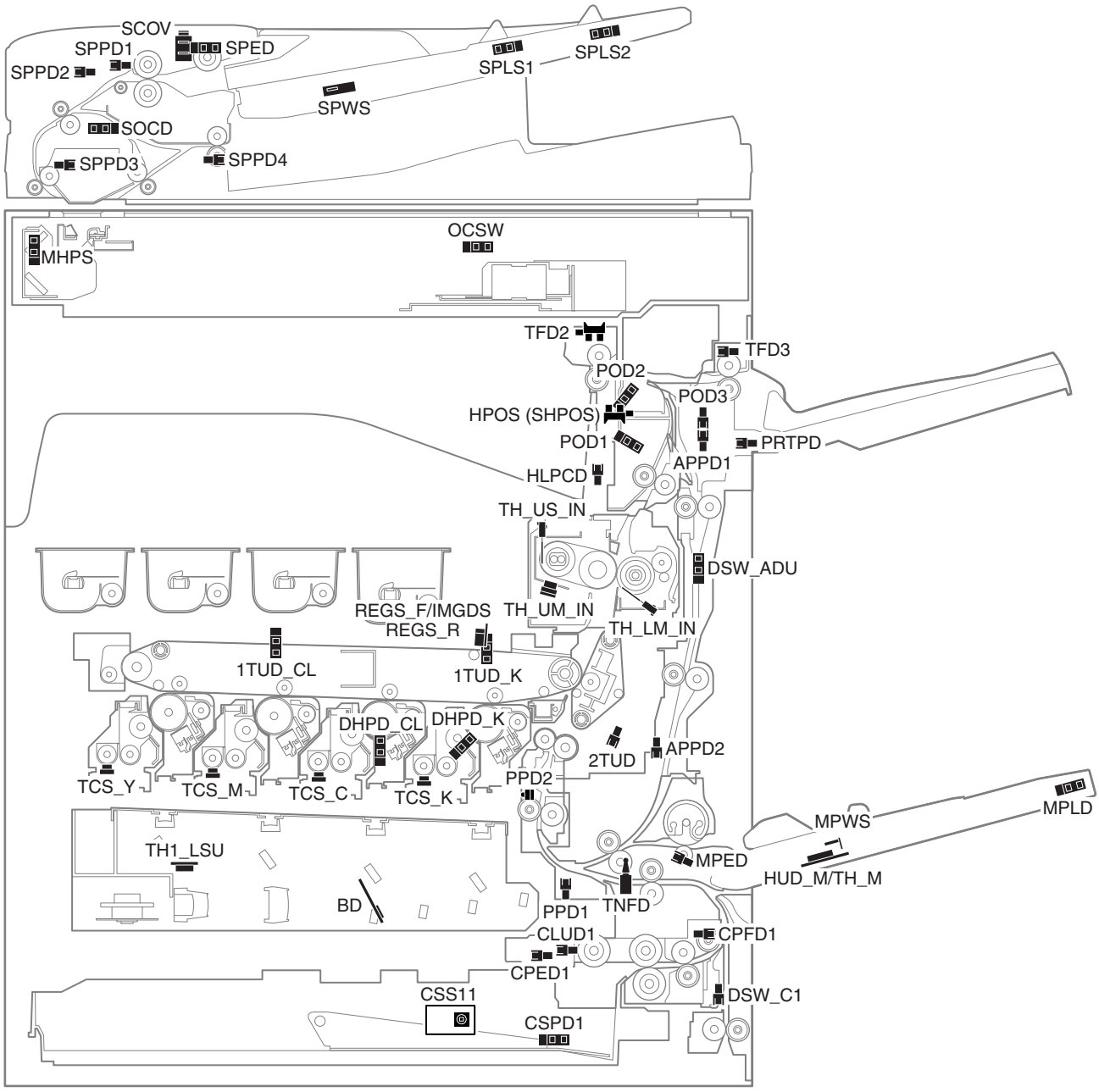
5. Sensors and detectors

A. 18cpm/20cpm/23cpm/26cpm/31cpm machine

(1) 18cpm/20cpm machine



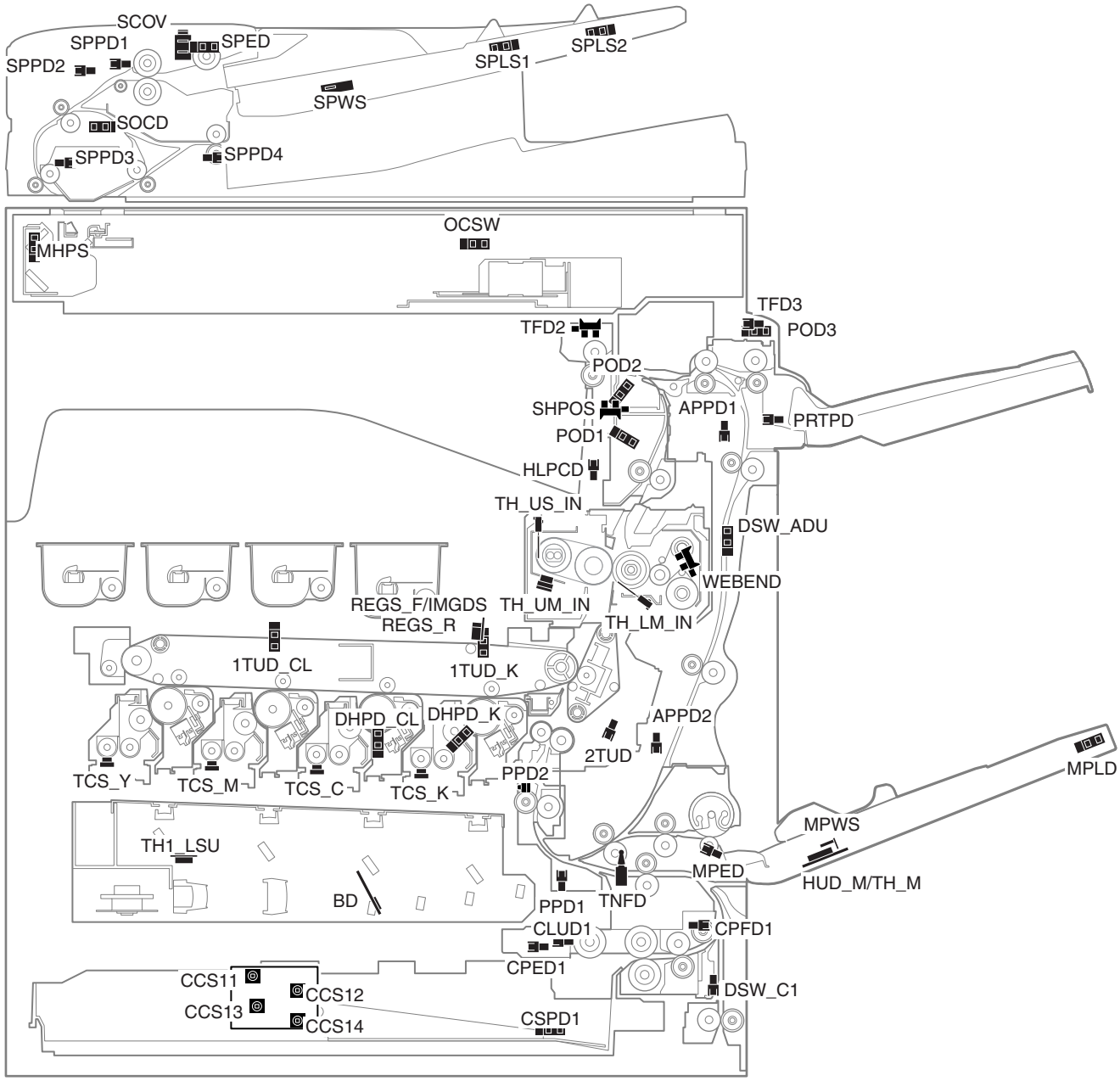
(2) 23cpm/26cpm/31cpm machine



Signal name	Name	Type	Function/Operation	Note
1TUD_CL	Transfer mode detector (CL)	Transmission type	Detects separation of the transfer belt and the transfer mode. (Detection is made by combination of 1TUD_CL/1TUD_K signals.)	
1TUD_K	Transfer mode detector (BK)	Transmission type	Detects separation of the transfer belt and the transfer mode. (Detection is made by combination of 1TUD_CL/1TUD_K signals.)	
2TUD	Secondary transfer position detector	Transmission type	Detects the position (separation) of the secondary transfer unit.	
APPD1	ADU paper transport detector 1	Transmission type	Detects paper entry and paper pass in the ADU.	
APPD2	ADU paper transport detector 2	Transmission type	Detects paper pass in the ADU transport roller 8.	
BD	Laser beam detector	Pin diode	Detects laser beams (monitor.)	
CLUD1	Paper feed tray upper limit sensor (Paper feed tray 1)	Transmission type	Detects the upper limit of the paper lift up. (Paper feed tray 1)	
CPED1	Paper empty sensor (Paper feed tray 1)	Transmission type	Detects paper empty. (Paper feed tray 1)	
CPFD1	Paper transport detector (Paper feed tray 1)	Transmission type	Detects paper pass in the paper transport section of the paper feed tray 1.	
CSPD1	Paper remaining quantity sensor (Paper feed tray 1)	Transmission type	Detects the paper remaining quantity. (Paper feed tray 1)	

Signal name	Name	Type	Function/Operation	Note
CSS11	Paper feed tray size detector (Paper feed tray 1)	Tact switch	Detects the paper size. Detects closing of the paper feed tray. (Paper feed tray 1)	
DHPD_CL	OPC drum rotation sensor (CL)	Transmission type	Detects rotation and the phase of the OPC drum (CL).	
DHPD_K	OPC drum rotation sensor (BK)	Transmission type	Detects rotation and the phase of the OPC drum (BK).	
DSW_ADU	ADU paper guide open/close detector	Transmission type	Detects open/close of the ADU paper guide.	
DSW_C1	Transport cover open/close detector (Paper feed tray 1)	Transmission type	Detects open/close of the transport section cover. (Paper feed tray 1)	
HLPCD	Fusing pressure detector	Transmission type	Detects the fusing pressure state.	
HPOS (SHPOS)	Shifter home positions sensor	Transmission type	Detects the shifter home position.	* 18cpm machine are not installed.
HUD_M/TH_M	Temperature/humidity sensor	Thermistor	Detects the temperature and the humidity. (For the process control)	Analog detection
MHPS	Scanner home position sensor	Transmission type	Detects the scanner home position.	
MPED	Paper empty sensor (Manual paper feed tray)	Transmission type	Detects presence of paper. (Manual paper feed tray)	
MPLD	Paper length detector (Manual paper feed tray)	Transmission type	Detects the paper length. (Manual paper feed tray)	
MPWS	Paper width detector (Manual paper feed tray)	Volume-type resistor	Detects the paper width. (Manual paper feed tray)	
OCSW	Paper size detection trigger sensor	Transmission type	Detects generation of the paper size detection trigger signal.	
POD1	Paper exit detector 1	Transmission type	Detects paper transport from the fusing section.	
POD2	Paper exit detector 2	Transmission type	Detects paper transport to the face-down paper exit tray.	
POD3	Paper exit detector 3	Transmission type	Detects paper transport to the right paper exit tray.	* 18cpm machine are not installed.
PPD1	Paper transport detector 1	Transmission type	Detects paper pass in front of the transport roller 5.	
PPD2	Paper transport detector 2	Reflection type	Detects paper pass in the transport roller 5 in front of the registration roller.	
PRTPD	Paper exit tray paper detector (Right paper exit tray)	Transmission type	Detects paper empty in the paper exit tray (Right paper exit tray).	* 18cpm machine are not installed.
REGS_F/IMGDS	Registration sensor F (Image density sensor)	Reflection type	Detects color shift. (F side) / Detects the toner patch density.	
REGS_R	Registration sensor R (Image density sensor)	Reflection type	Detects the toner patch density.	
SCOV	RSPF cover open/close detector	Micro switch	Detects open/close of the RSPF cover.	
SOCD	RSPF open/close sensor	Transmission type	Detects open/close of the RSPF unit.	
SPED	Document sensor	Transmission type	Detects document empty in the RSPF paper feed tray.	
SPLS1	Paper size detector 1	Transmission type	Detects the document length in the RSPF paper feed tray.	
SPLS2	Paper size detector 2	Transmission type	Detects the document length in the RSPF paper feed tray.	
SPPD1	Document transport sensor 1	Transmission type	Detects paper feed and the document size in random paper feed.	
SPPD2	Document transport sensor 2	Transmission type	Detects paper pass.	
SPPD3	Document transport sensor 3	Transmission type	Detects paper pass.	
SPPD4	Document transport sensor 4	Transmission type	Detects paper exit and switchback.	
SPWS	Document size detector	Volume-type resistor	Detects the document width.	
TCS_C	Toner sensor (C)	Magnetic sensor	Detects toner supply from the toner cartridge. Detects the toner density (C).	Analog detection
TCS_K	Toner sensor (K)	Magnetic sensor	Detects toner supply from the toner cartridge. Detects the toner density (K).	Analog detection
TCS_M	Toner sensor (M)	Magnetic sensor	Detects toner supply from the toner cartridge. Detects the toner density (M).	Analog detection
TCS_Y	Toner sensor (Y)	Magnetic sensor	Detects toner supply from the toner cartridge. Detects the toner density (Y).	Analog detection
TFD2	Paper exit tray full detector (Center paper exit tray)	Transmission type	Detects paper full in the center paper exit tray.	
TFD3	Paper exit tray full detector (Right paper exit tray)	Transmission type	Detects paper full in the right paper exit tray.	* 18cpm machine are not installed.
TH_LM_IN	Fusing temperature sensor	Thermistor	Detects the surface temperature of the fusing roller (B).	Analog detection
TH_UM_IN	Fusing temperature sensor (Main)	Non-contact thermistor	Detects the surface temperature at the center of the fusing belt (roller).	Analog detection
TH_US_IN	Fusing temperature sensor (Sub)	Thermistor	Detects the suffered temperature at the edge section of the fusing belt (roller).	Analog detection
TH1_LSU	LSU temperature sensor	Thermistor	Detects the temperature in the LSU. (For correction of the LSU distortion)	Analog detection
TNFD	Waste toner full detector	Mechanical switch	Detects full of waste toner.	

B. 36cpm machine

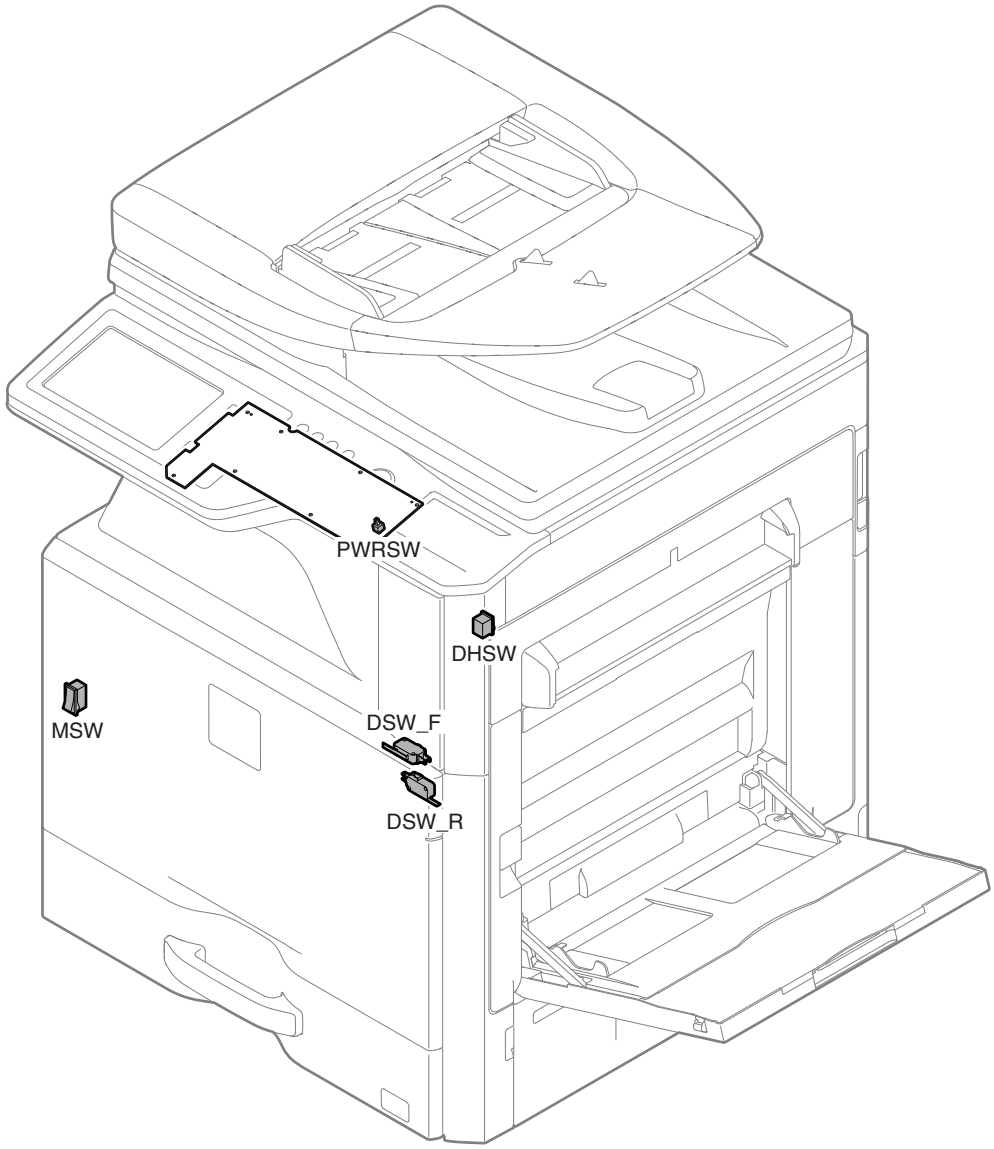


Signal name	Name	Type	Function/Operation	Note
1TUD_CL	Transfer mode detector (CL)	Transmission type	Detects separation of the transfer belt and the transfer mode. (Detection is made by combination of 1TUD_CL/1TUD_K signals.)	
1TUD_K	Transfer mode detector (BK)	Transmission type	Detects separation of the transfer belt and the transfer mode. (Detection is made by combination of 1TUD_CL/1TUD_K signals.)	
2TUD	Secondary transfer position detector	Transmission type	Detects the position (separation) of the secondary transfer unit.	
APPD1	ADU paper transport detector 1	Transmission type	Detects paper entry and paper pass in the ADU.	
APPD2	ADU paper transport detector 2	Transmission type	Detects paper pass in the ADU transport roller 8.	
BD	Laser beam detector	Pin diode	Detects laser beams (monitor.)	
CLUD1	Paper feed tray upper limit sensor (Paper feed tray 1)	Transmission type	Detects the upper limit of the paper lift up. (Paper feed tray 1)	
CPED1	Paper empty sensor (Paper feed tray 1)	Transmission type	Detects paper empty. (Paper feed tray 1)	
CPFD1	Paper transport detector (Paper feed tray 1)	Transmission type	Detects paper pass in the paper transport section of the paper feed tray 1.	
CSPD1	Paper remaining quantity sensor (Paper feed tray 1)	Transmission type	Detects the paper remaining quantity. (Paper feed tray 1)	

Signal name	Name	Type	Function/Operation	Note
CSS11	Paper feed tray size detector (Paper feed tray 1)	Tact switch	Detects the paper size. Detects closing of the paper feed tray. (Paper feed tray 1)	
CSS12				
CSS13				
CSS14				
DHPD_CL	OPC drum rotation sensor (CL)	Transmission type	Detects rotation and the phase of the OPC drum (CL).	
DHPD_K	OPC drum rotation sensor (BK)	Transmission type	Detects rotation and the phase of the OPC drum (BK).	
DSW_ADU	ADU paper guide open/close detector	Transmission type	Detects open/close of the ADU paper guide.	
DSW_C1	Transport cover open/close detector (Paper feed tray 1)	Transmission type	Detects open/close of the transport section cover. (Paper feed tray 1)	
HLPCD	Fusing pressure detector	Transmission type	Detects the fusing pressure state.	
SHPOS	Shifter home positions sensor	Transmission type	Detects the shifter home position.	
HUD_M/TH_M	Temperature/humidity sensor	Thermistor	Detects the temperature and the humidity. (For the process control)	Analog detection
MHPS	Scanner home position sensor	Transmission type	Detects the scanner home position.	
MPED	Paper empty sensor (Manual paper feed tray)	Transmission type	Detects presence of paper. (Manual paper feed tray)	
MPLD	Paper length detector (Manual paper feed tray)	Transmission type	Detects the paper length. (Manual paper feed tray)	
MPWS	Paper width detector (Manual paper feed tray)	Volume-type resistor	Detects the paper width. (Manual paper feed tray)	
OCSW	Paper size detection trigger sensor	Transmission type	Detects generation of the paper size detection trigger signal.	
POD1	Paper exit detector 1	Transmission type	Detects paper transport from the fusing section.	
POD2	Paper exit detector 2	Transmission type	Detects paper transport to the face-down paper exit tray.	
POD3	Paper exit detector 3	Transmission type	Detects paper transport to the right paper exit tray.	
PPD1	Paper transport detector 1	Transmission type	Detects paper pass in front of the transport roller 5.	
PPD2	Paper transport detector 2	Reflection type	Detects paper pass in the transport roller 5 in front of the registration roller.	
PRTPD	Paper exit tray paper detector (Right paper exit tray)	Transmission type	Detects paper empty in the paper exit tray (Right paper exit tray).	
REGS_F/IMGDS	Registration sensor F (Image density sensor)	Reflection type	Detects color shift. (F side) / Detects the toner patch density.	
REGS_R	Registration sensor R (Image density sensor)	Reflection type	Detects the toner patch density.	
SCOV	RSPF cover open/close detector	Micro switch	Detects open/close of the RSPF cover.	
SOCD	RSPF open/close sensor	Transmission type	Detects open/close of the RSPF unit.	
SPED	Document sensor	Transmission type	Detects document empty in the RSPF paper feed tray.	
SPLS1	Paper size detector 1	Transmission type	Detects the document length in the RSPF paper feed tray.	
SPLS2	Paper size detector 2	Transmission type	Detects the document length in the RSPF paper feed tray.	
SPPD1	Document transport sensor 1	Transmission type	Detects paper feed and the document size in random paper feed.	
SPPD2	Document transport sensor 2	Transmission type	Detects paper pass.	
SPPD3	Document transport sensor 3	Transmission type	Detects paper pass.	
SPPD4	Document transport sensor 4	Transmission type	Detects paper exit and switchback.	
SPWS	Document size detector	Volume-type resistor	Detects the document width.	
TCS_C	Toner sensor (C)	Magnetic sensor	Detects toner supply from the toner cartridge. Detects the toner density (C).	Analog detection
TCS_K	Toner sensor (K)	Magnetic sensor	Detects toner supply from the toner cartridge. Detects the toner density (K).	Analog detection
TCS_M	Toner sensor (M)	Magnetic sensor	Detects toner supply from the toner cartridge. Detects the toner density (M).	Analog detection
TCS_Y	Toner sensor (Y)	Magnetic sensor	Detects toner supply from the toner cartridge. Detects the toner density (Y).	Analog detection
TFD2	Paper exit tray full detector (Center paper exit tray)	Transmission type	Detects paper full in the center paper exit tray.	
TFD3	Paper exit tray full detector (Right paper exit tray)	Transmission type	Detects paper full in the right paper exit tray.	
TH_LM_IN	Fusing temperature sensor	Thermistor	Detects the surface temperature of the fusing roller (B).	Analog detection
TH_UM_IN	Fusing temperature sensor (Main)	Non-contact thermistor	Detects the surface temperature at the center of the fusing belt.	Analog detection
TH_US_IN	Fusing temperature sensor (Sub)	Thermistor	Detects the suffered temperature at the edge section of the fusing belt.	Analog detection
TH1_LSU	LSU temperature sensor	Thermistor	Detects the temperature in the LSU. (For correction of the LSU distortion)	Analog detection
TNFD	Waste toner full detector	Mechanical switch	Detects full of waste toner.	
WEBEND	Web end detector	Transmission type	Detects web end of the fusing unit.	

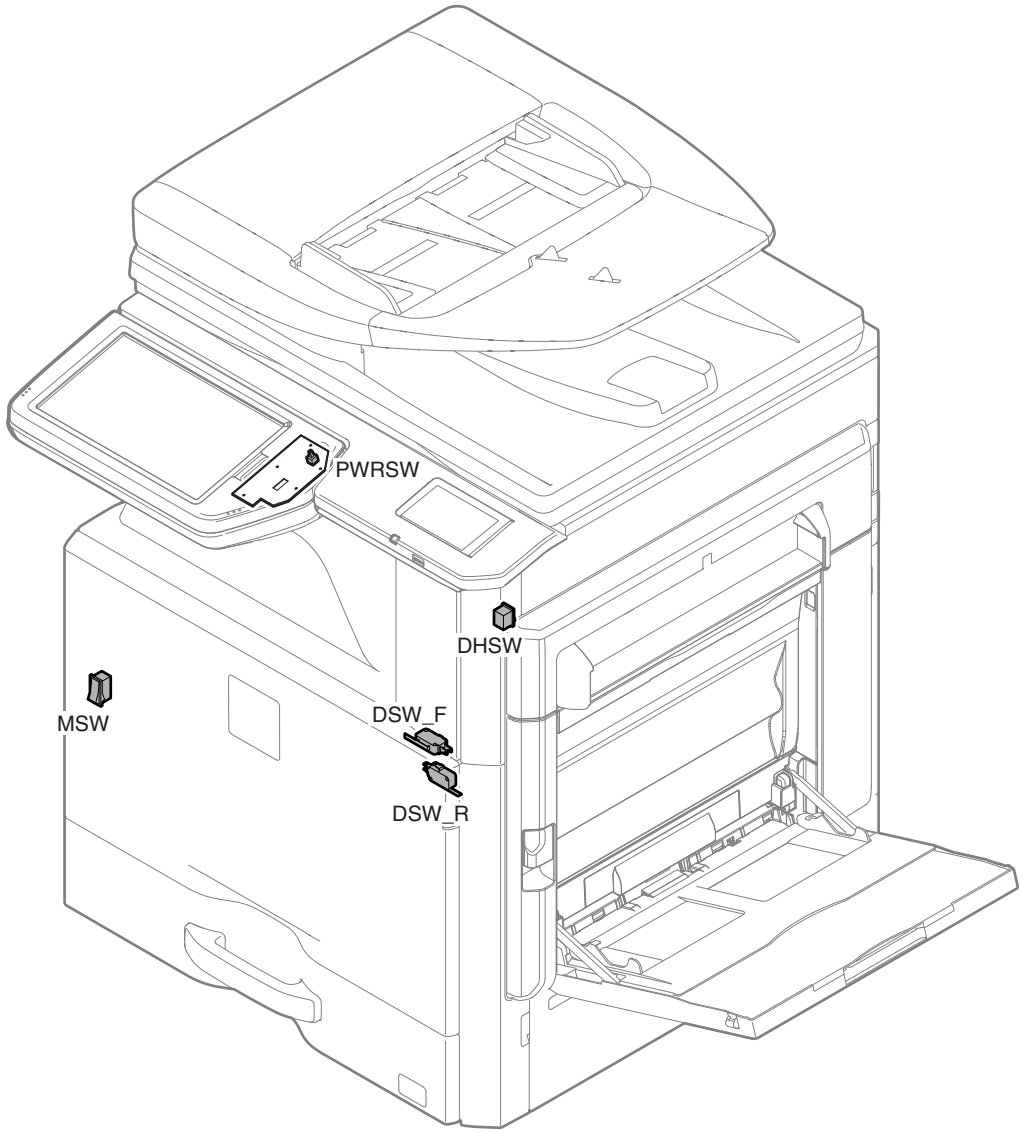
6. Switches

A. 18cpm/20cpm/23cpm/31cpm(G) machine



Signal name	Name	Type	Function/Operation
DHSW	Dehumidifier heater switch	Seesaw switch	Turns ON/OFF the power line of the dehumidifier heater.
DSW_F	Front door open/close switch	Micro switch	Detects open/close of the front door. Detects ON/OFF of the power line of the fusing unit, the motors, and the LSU laser.
DSW_R	Right transport unit (right door) open/close switch	Micro switch	Detects open/close of the right paper transport section (right door). Detects ON/OFF of the power line of the fusing unit, the motors, and the LSU laser.
MSW	Main power switch	Seesaw switch	Turns ON/OFF the main power.
PWRSW	Operation panel power switch	Push switch	Turns ON/OFF the power on the secondary side.

B. 26cpm/36cpm/31cpm(A) machine

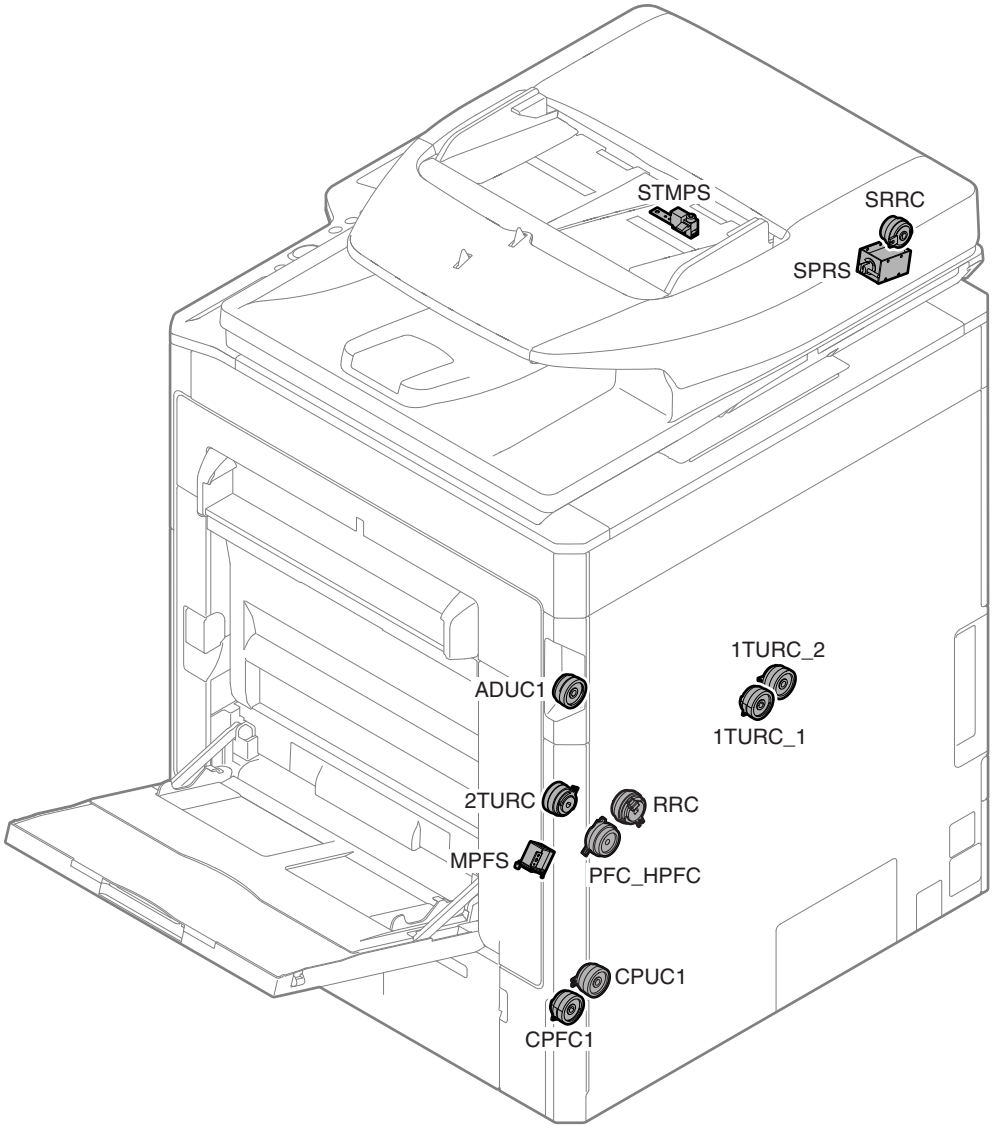


Signal name	Name	Type	Function/Operation
DHSW	Dehumidifier heater switch	Seesaw switch	Turns ON/OFF the power line of the dehumidifier heater.
DSW_F	Front door open/close switch	Micro switch	Detects open/close of the front door. Detects ON/OFF of the power line of the fusing unit, the motors, and the LSU laser.
DSW_R	Right transport unit (right door) open/close switch	Micro switch	Detects open/close of the right paper transport section (right door). Detects ON/OFF of the power line of the fusing unit, the motors, and the LSU laser.
MSW	Main power switch	Seesaw switch	Turns ON/OFF the main power.
PWRSW	Operation panel power switch	Push switch	Turns ON/OFF the power on the secondary side.

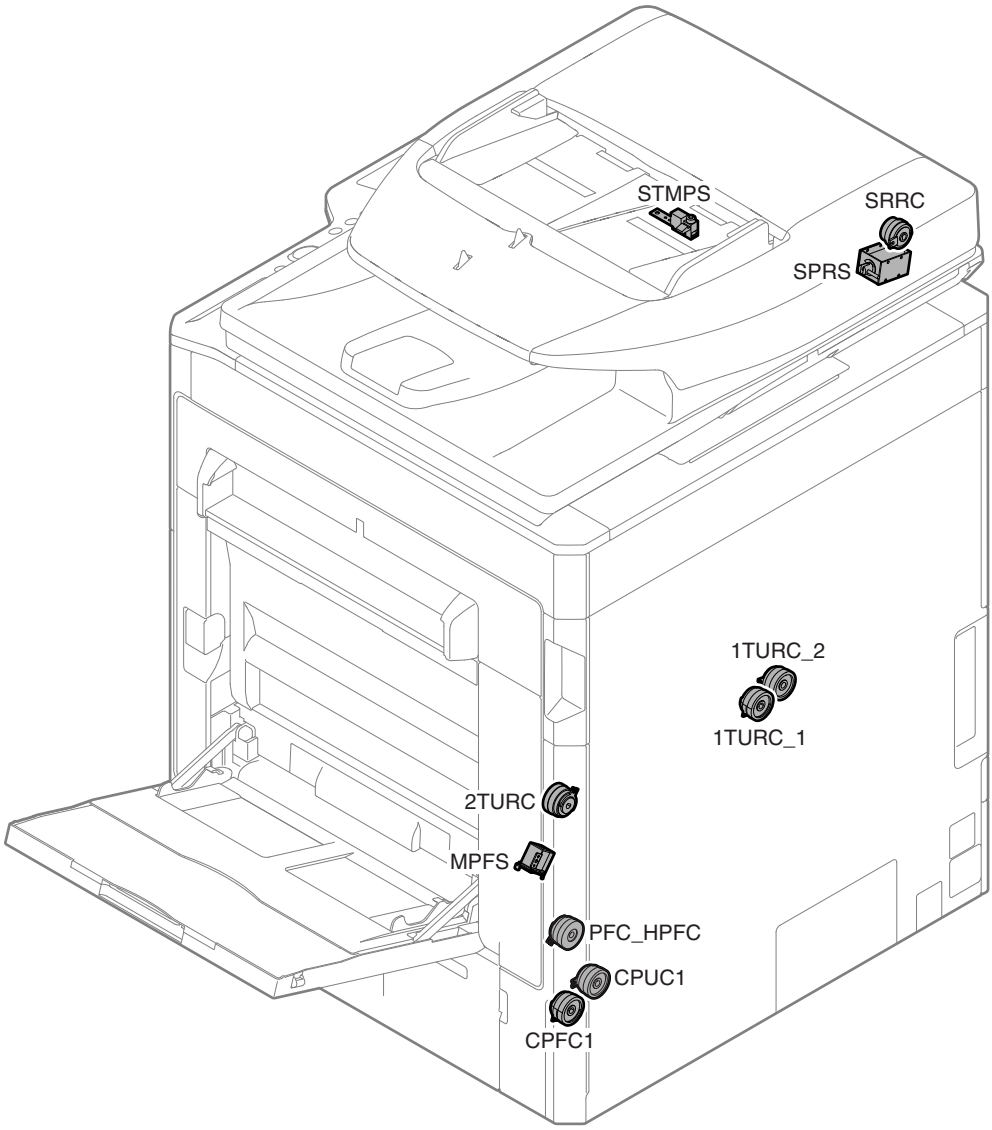
7. Clutches and solenoids

A. 18cpm/20cpm/23cpm/26cpm/31cpm machine

(1) 18cpm/20cpm machine

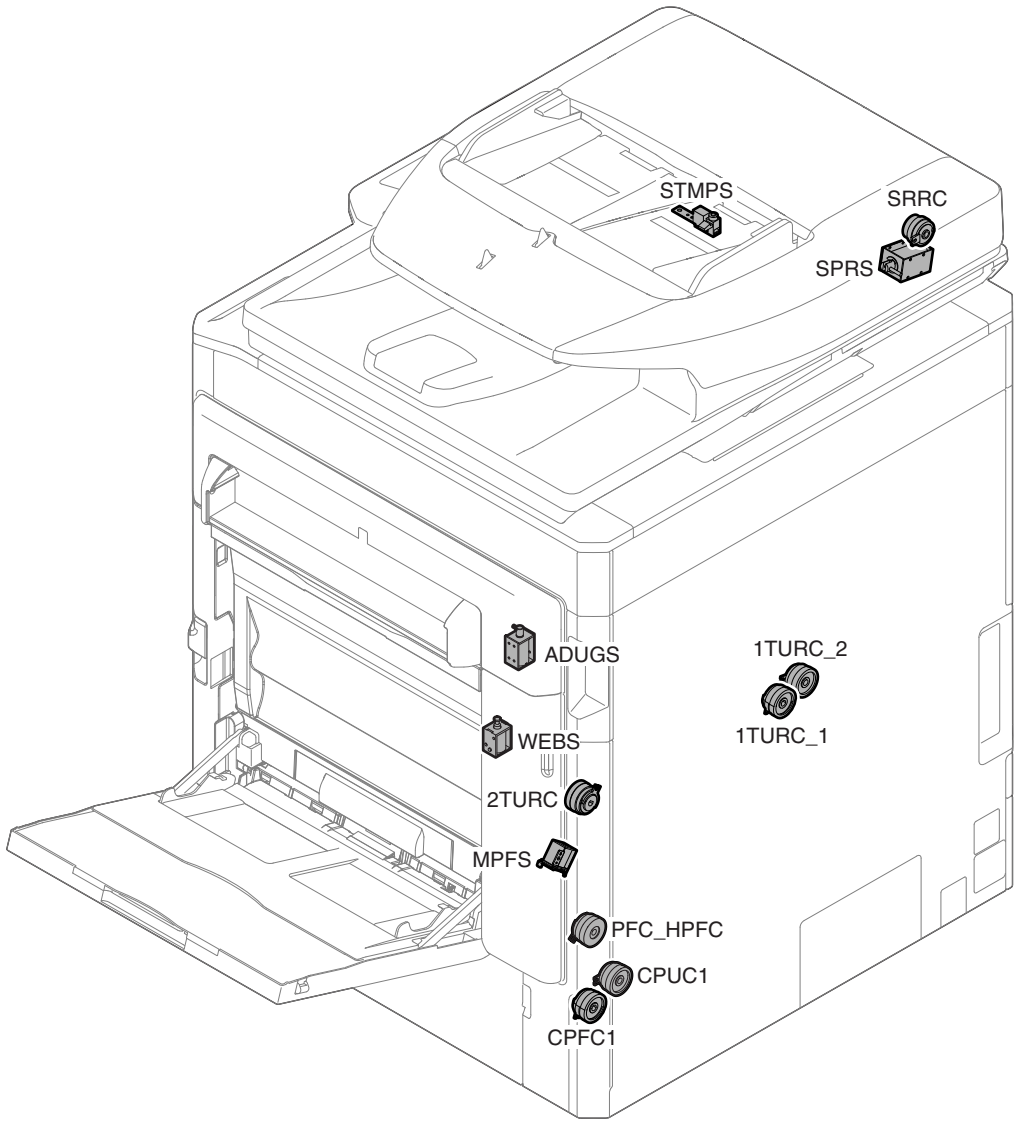


(2) 23cpm/26cpm/31cpm machine



Signal name	Name	Type	Function/Operation
1TURC_1	Primary transfer separation clutch 1	Magnetic clutch	Controls separation of the primary transfer unit.
1TURC_2	Primary transfer separation clutch 2	Magnetic clutch	Controls separation of the primary transfer unit.
2TURC	Secondary transfer separation clutch	Magnetic clutch	Controls separation of the secondary transfer unit.
ADUC1	ADU clutch	Magnetic clutch	Controls the ADU and the transport roller in the right paper exit section.
CPFC1	Tray vertical transport clutch 1	Magnetic clutch	Controls the transport roller of the paper feed tray 1 section.
CPUC1	Paper feed clutch (Paper feed tray 1)	Magnetic clutch	Controls ON/OFF of the paper feed roller in the paper feed tray 1 section. (Paper feed tray 1)
MPFS	Paper feed solenoid (Manual paper feed)	Magnetic solenoid	Controls the paper feed roller. (Manual paper feed)
PFC_HPFC	Transport roller clutch	Magnetic clutch	Controls the transport roller 4. (23cpm/26cpm/31cpm machine)/Controls the transport roller 5, 6. (20cpm machine)
RRC	Registration roller clutch	Magnetic clutch	Controls the registration roller. (Controls the timing of the transfer image for the paper.)
SPRS	Paper exit roller pressure control solenoid (RSPF)	Magnetic solenoid	Controls ON/OFF of the transport power of the paper exit roller. (Releases the paper exit roller pressure when reversing paper.)
SRRC	Registration roller clutch (RSPF)	Magnetic clutch	Controls the registration roller. (Controls the timing of document transport.)
STMPS	Stamp solenoid	Magnetic solenoid	Drives the finish stamp.

B. 36cpm machine

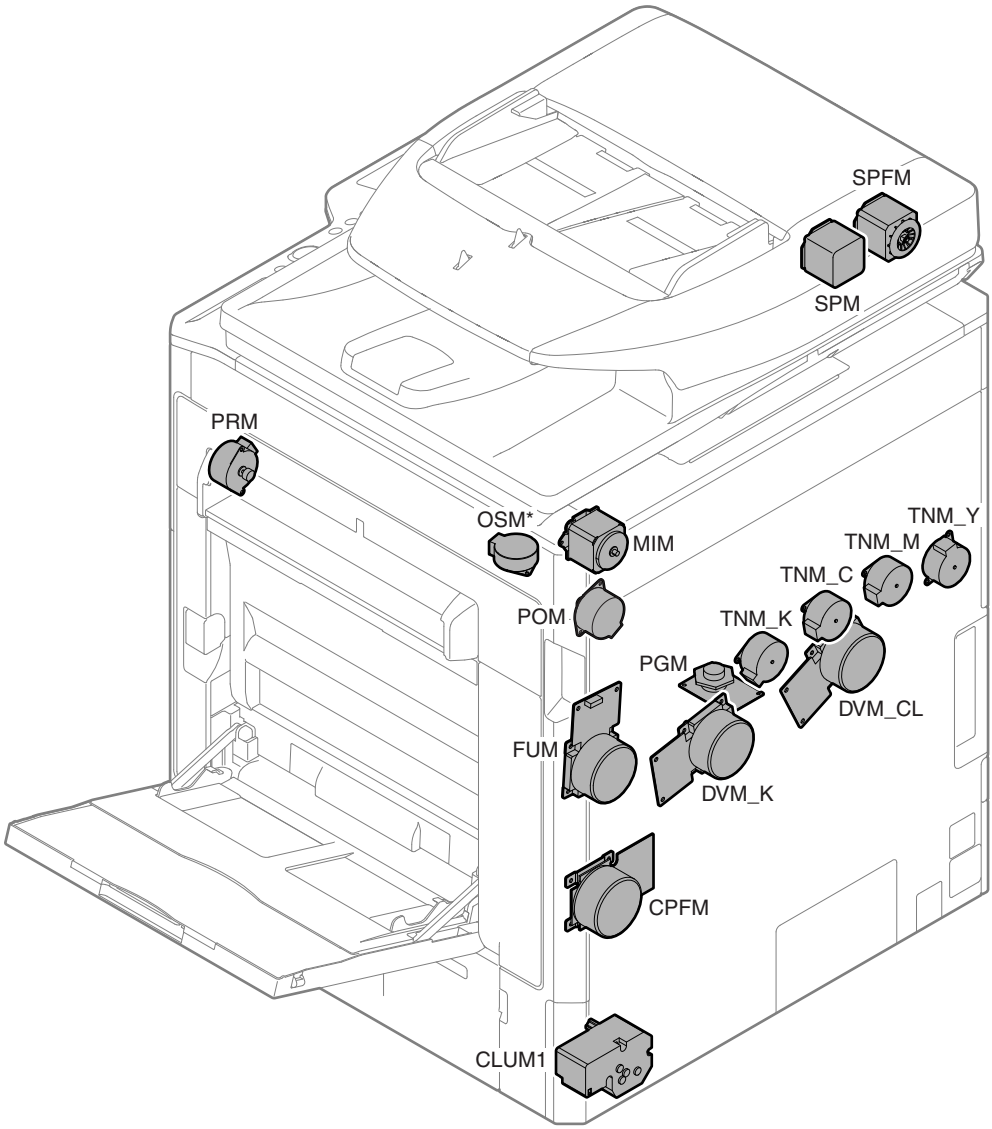


Signal name	Name	Type	Function/Operation
1TURC_1	Primary transfer separation clutch 1	Magnetic clutch	Controls separation of the primary transfer unit.
1TURC_2	Primary transfer separation clutch 2	Magnetic clutch	Controls separation of the primary transfer unit.
2TURC	Secondary transfer separation clutch	Magnetic clutch	Controls separation of the secondary transfer unit.
ADUGS	ADU gate solenoid	Magnetic solenoid	Controls the paper exit gate.
CPFC1	Tray vertical transport clutch 1	Magnetic clutch	Controls the transport roller of the paper feed tray 1 section.
CPUC1	Paper feed clutch (Paper feed tray 1)	Magnetic clutch	Controls ON/OFF of the paper feed roller in the paper feed tray 1 section. (Paper feed tray 1)
MPFS	Paper feed solenoid (Manual paper feed)	Magnetic solenoid	Controls the paper feed roller. (Manual paper feed)
PFC_HPFC	Transport roller clutch	Magnetic clutch	Controls the transport roller 4.
SPRS	Paper exit roller pressure control solenoid (RSPF)	Magnetic solenoid	Controls ON/OFF of the transport power of the paper exit roller. (Releases the paper exit roller pressure when reversing paper.)
SRRC	Registration roller clutch (RSPF)	Magnetic clutch	Controls the registration roller. (Controls the timing of document transport.)
STMPS	Stamp solenoid	Magnetic solenoid	Drives the finish stamp.
WEBS	Web drive solenoid	Magnetic solenoid	Drives the web.

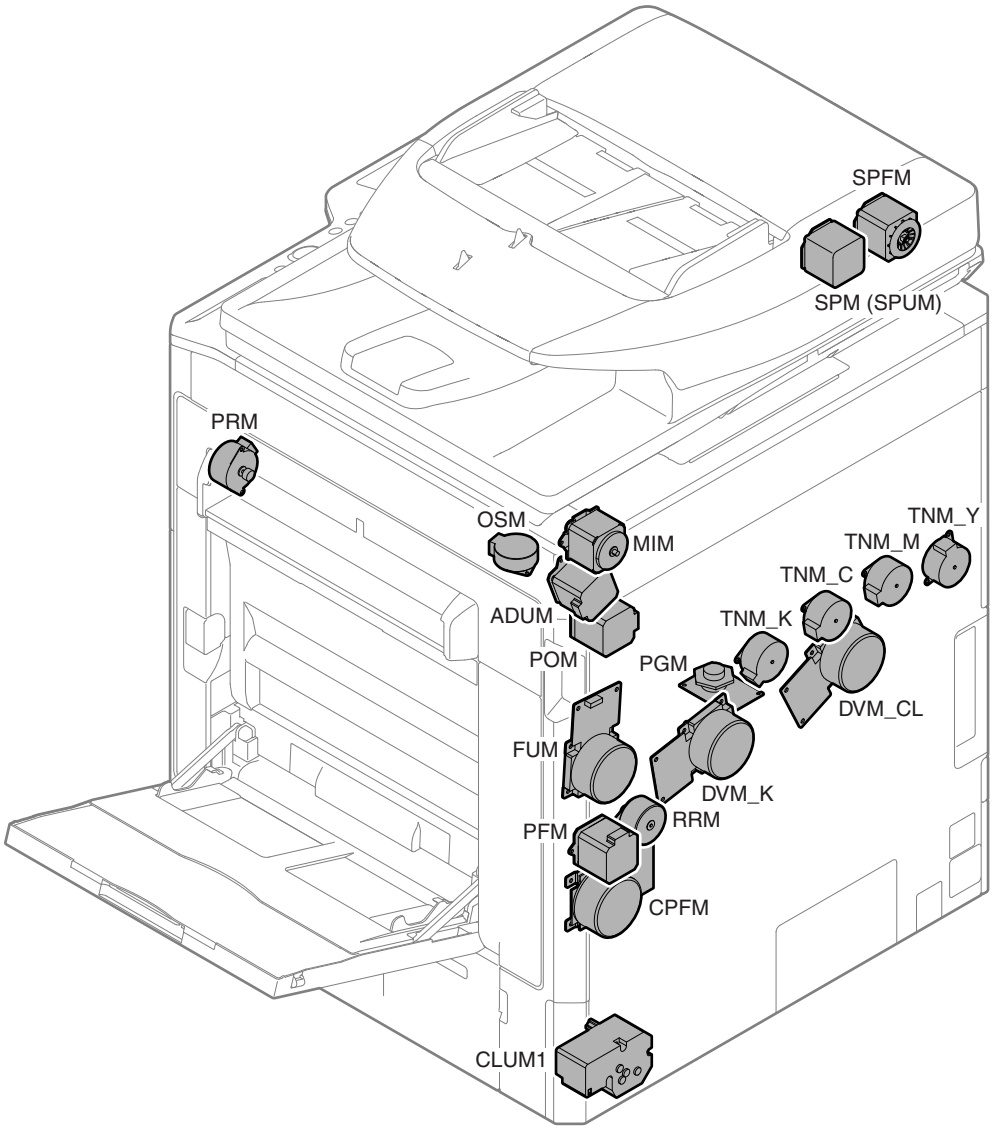
8. Motors

A. 18cpm/20cpm/23cpm/26cpm/31cpm machine

(1) 18cpm/20cpm machine



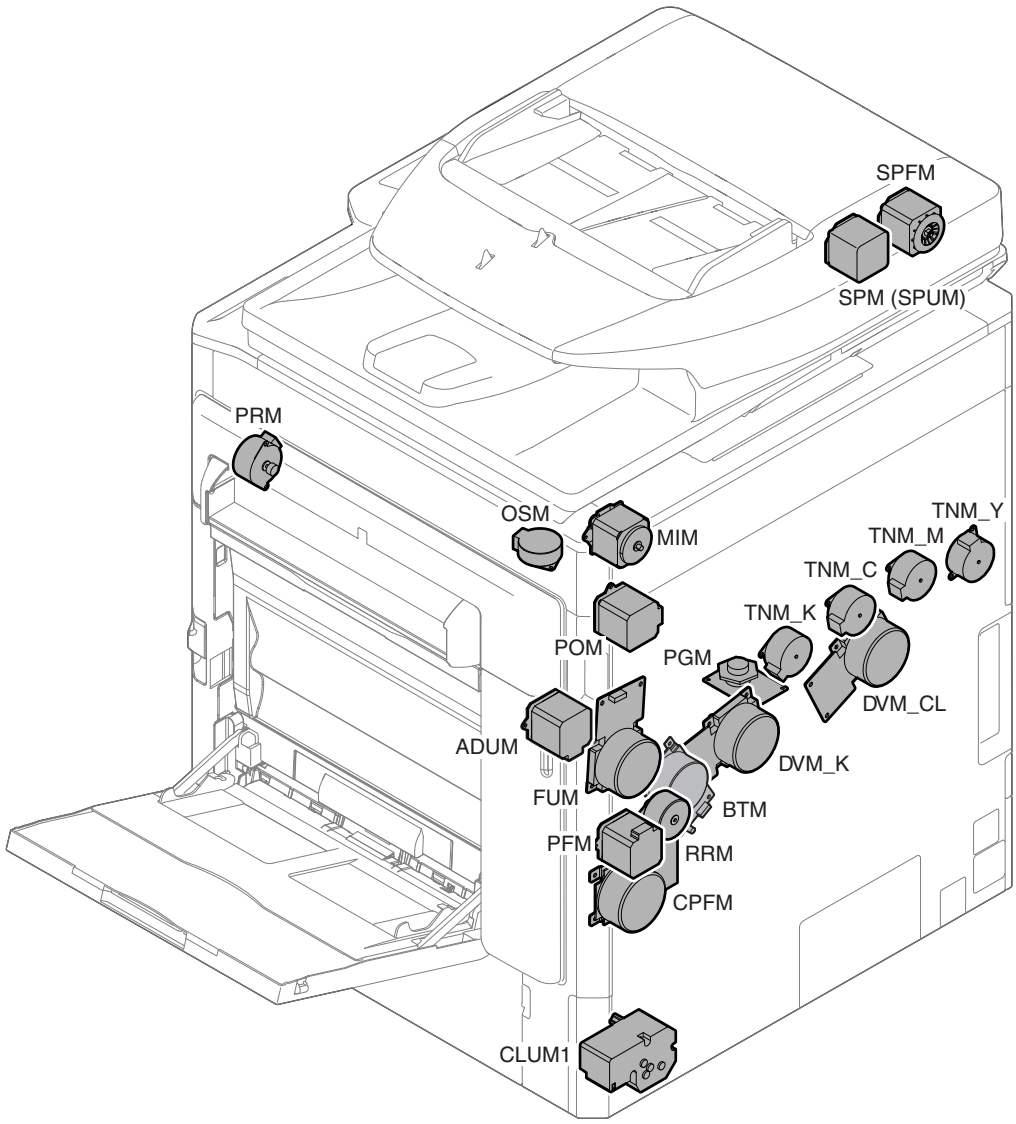
(2) 23cpm/26cpm/31cpm machine



Signal name	Name	Type	Function/Operation
ADUM	ADU motor	Stepping motor	Drives the ADU and the transport roller in the right paper exit section.
CLUM1	Paper tray lift motor (Paper feed tray 1)	DC brush motor	Lifts the lift plate of the paper feed tray. (Paper feed tray 1)
CPFM	Paper feed motor	DC brushless motor	Drives the paper feed section.
DVM_CL	Developing motor (CL)	DC brushless motor	Drives the developing/OPC drum section (CL).
DVM_K	Developing motor (K)	DC brushless motor	Drives the developing/black OPC drum (BK)/transfer section.
FUM	Fusing motor	DC brushless motor	Drives the fusing section.
MIM	Scan motor	Stepping motor	Drives the scanner unit. (scan, return operations)
OSM*	Offset motor	Stepping motor	Offsets (shifts) paper.
PFM	Transport motor	Stepping motor	Drives the transport rollers 5 and 9.
PGM	Polygon motor	DC brushless motor	Scans laser beams.
POM	Paper exit motor	Stepping motor	Drives the roller in the paper exit section.
PRM	Fusing pressure control motor	Stepping motor	Controls ON/OFF of the fusing roller pressure.
RRM	Registration motor	Stepping motor	Drives the registration roller. (Controls the timing of the transfer image for the paper.)
SPFM	RSPF transport motor	Stepping motor	Transports a document.
SPM/SPUM	RSPF paper feed motor	Stepping motor	Feeds a document.
TNM_C	Toner motor (C)	Stepping motor	Supplies toner from the toner cartridge (C) to the developing unit.
TNM_K	Toner motor (K)	Stepping motor	Supplies toner from the toner cartridge (K) to the developing unit.
TNM_M	Toner motor (M)	Stepping motor	Supplies toner from the toner cartridge (M) to the developing unit.
TNM_Y	Toner motor (Y)	Stepping motor	Supplies toner from the toner cartridge (Y) to the developing unit.

* 18cpm machine are not installed.

B. 36cpm machine

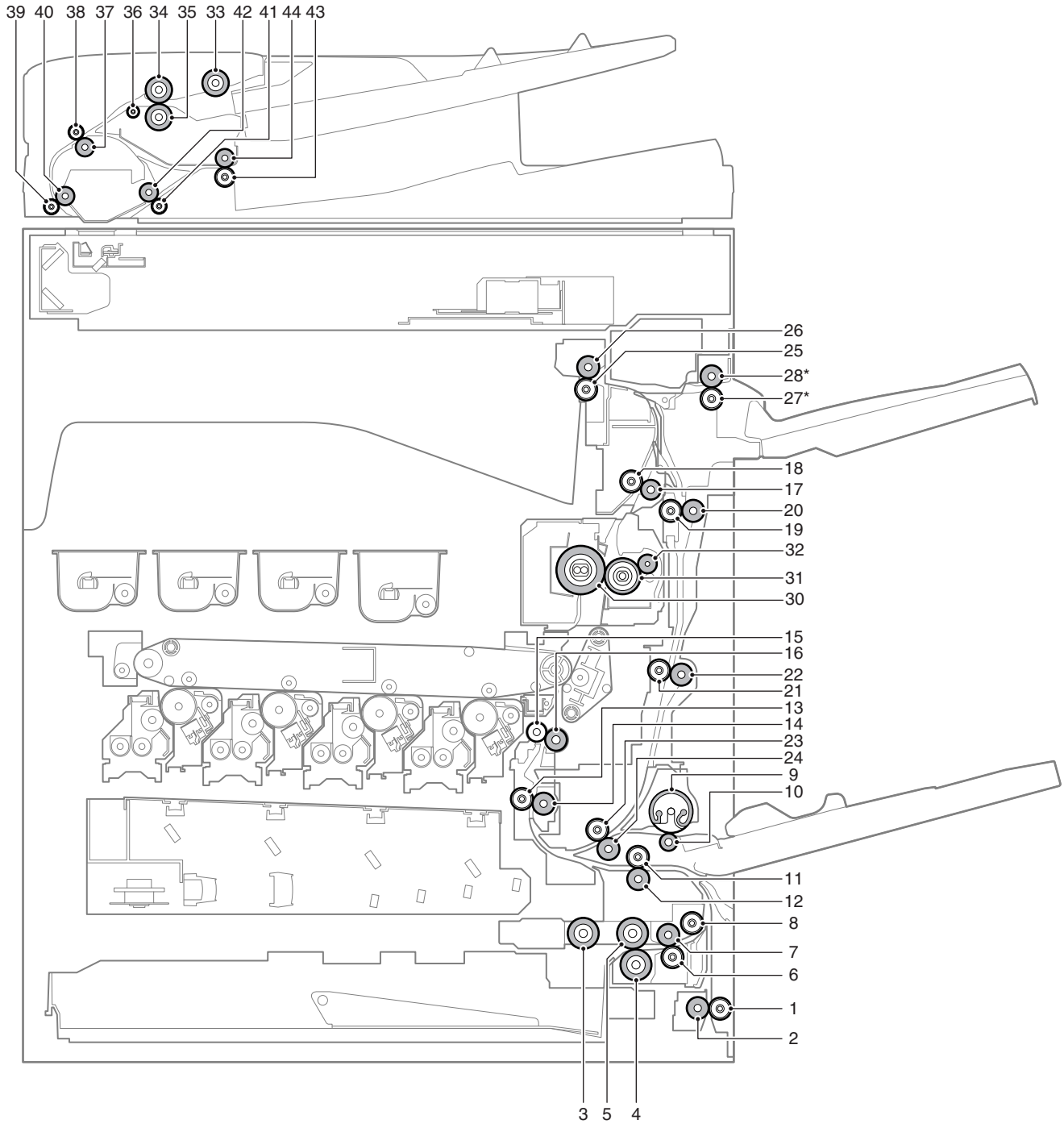


Signal name	Name	Type	Function/Operation
ADUM	ADU motor	Stepping motor	Drives the ADU and the transport roller in the right paper exit section.
BTM	Transfer belt drive motor	DC brushless motor	Drives the transfer belt.
CLUM1	Paper tray lift motor (Paper feed tray 1)	DC brush motor	Lifts the lift plate of the paper feed tray. (Paper feed tray 1)
CPFM	Paper feed motor	DC brushless motor	Drives the paper feed section.
DVM_CL	Developing motor (CL)	DC brushless motor	Drives the developing/OPC drum section (CL).
DVM_K	Developing motor (K)	DC brushless motor	Drives the developing/black OPC drum (BK)/transfer section.
FUM	Fusing motor	DC brushless motor	Drives the fusing section.
MIM	Scan motor	Stepping motor	Drives the scanner unit. (scan, return operations)
OSM	Offset motor	Stepping motor	Offsets (shifts) paper.
PFM	Transport motor	Stepping motor	Drives the transport rollers 5 and 9.
PGM	Polygon motor	DC brushless motor	Scans laser beams.
POM	Paper exit motor	Stepping motor	Drives the roller in the paper exit section.
PRM	Fusing pressure control motor	Stepping motor	Controls ON/OFF of the fusing roller pressure.
RRM	Registration motor	Stepping motor	Drives the registration roller. (Controls the timing of the transfer image for the paper.)
SPFM	RSPF transport motor	Stepping motor	Transports a document.
SPM (SPUM)	RSPF paper feed motor	Stepping motor	Feeds a document.
TNM_C	Toner motor (C)	Stepping motor	Supplies toner from the toner cartridge (C) to the developing unit.
TNM_K	Toner motor (K)	Stepping motor	Supplies toner from the toner cartridge (K) to the developing unit.
TNM_M	Toner motor (M)	Stepping motor	Supplies toner from the toner cartridge (M) to the developing unit.
TNM_Y	Toner motor (Y)	Stepping motor	Supplies toner from the toner cartridge (Y) to the developing unit.

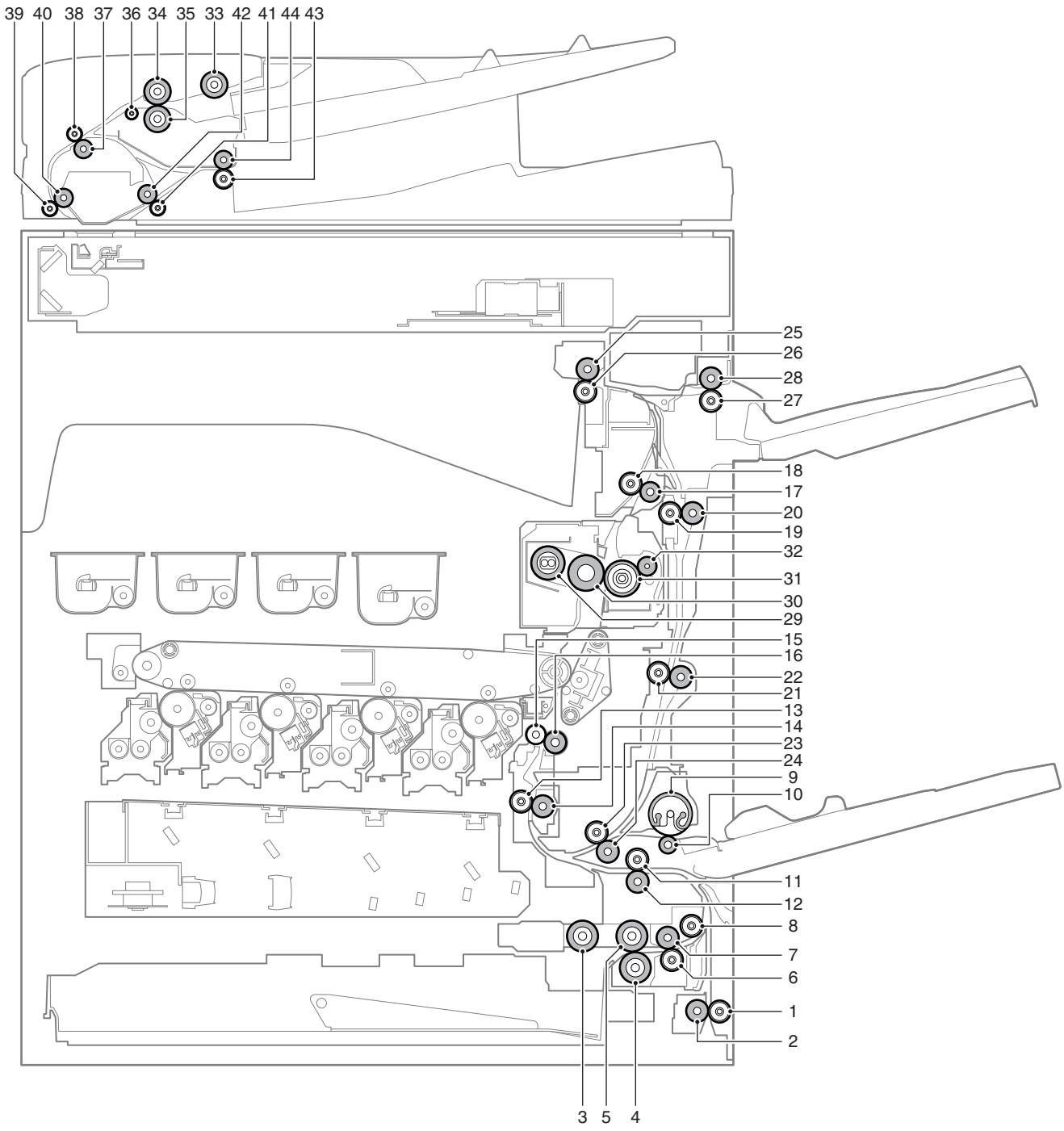
9. Rollers

A. 18cpm/20cpm/23cpm/26cpm/31cpm machine

(1) 18cpm/20cpm machine



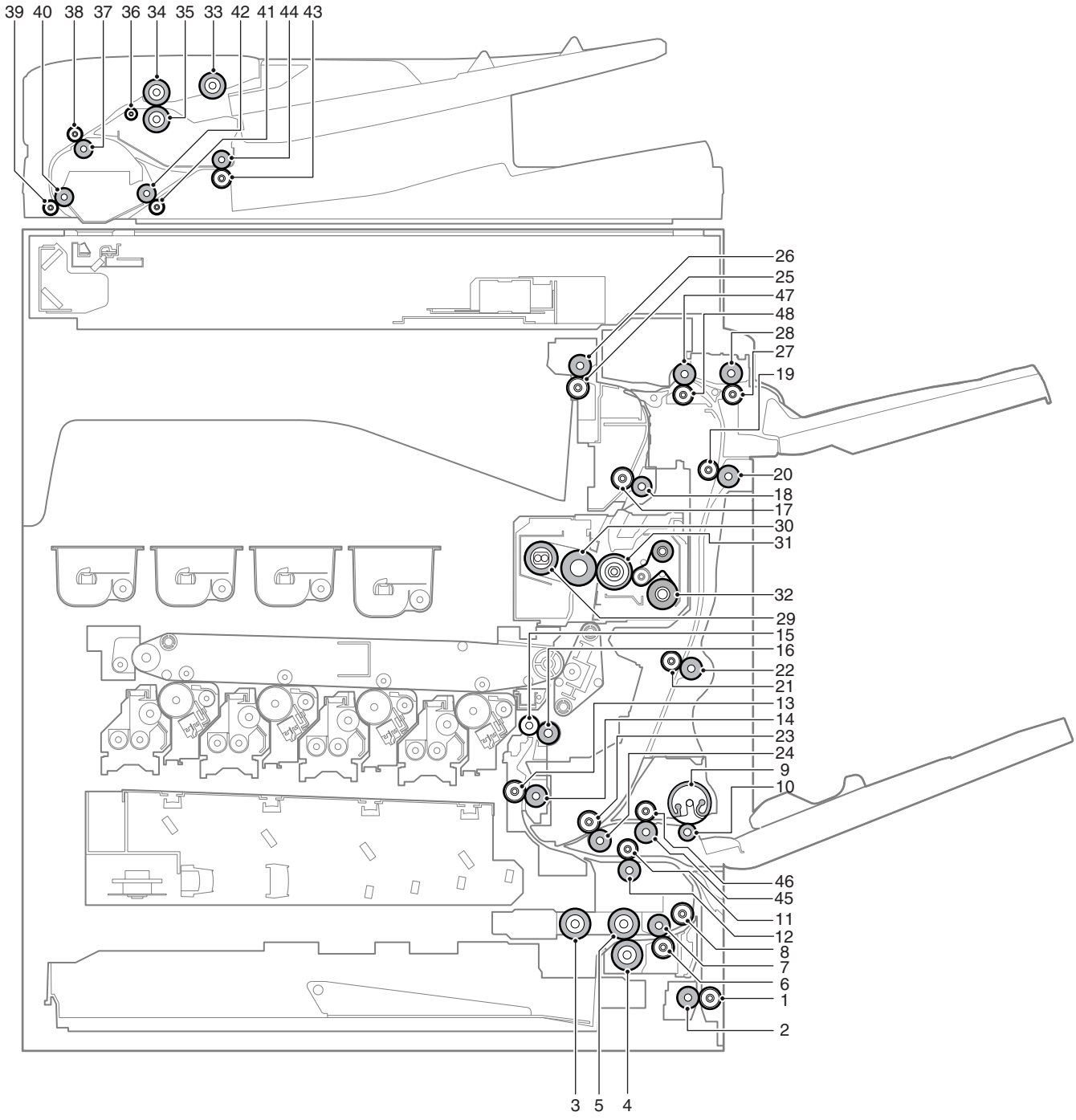
(2) 23cpm/26cpm/31cpm machine



No.	Name	Function/Operation
1	Transport roller 1 (Idle)	Apply a pressure to paper and the transport roller to provide the transport power of the transport roller to paper.
2	Transport roller 1 (Drive)	Transports paper fed from the paper feed desk tray to the transport roller 4.
3	Paper pickup roller (No. 1 paper feed tray)	Feeds paper to the paper feed roller.
4	Separation roller (No. 1 paper feed tray)	Separates paper to prevent double-feeding.
5	Paper feed roller (No. 1 paper feed tray)	Feeds paper to the paper transport section.
6	Transport roller 2 (Idle)	Apply a pressure to paper and the transport roller to provide the transport power of the transport roller to paper.
7	Transport roller 2 (Drive)	Transports paper fed from the paper feed tray 1 to the transport roller 3.
8	Transport roller 3	Transports paper from the transport roller 2 to the transport roller 4.
9	Paper feed roller (Manual paper feed tray)	Feeds paper to the paper transport section.
10	Separation roller (Manual paper feed tray)	Separates paper to prevent double-feeding.
11	Transport roller 4 (Idle)	Apply a pressure to paper and the transport roller to provide the transport power of the transport roller to paper.
12	Transport roller 4 (Drive)	Transports paper from the transport rollers 1 and 3 to the transport roller 5.
13	Transport roller 5 (Idle)	Apply a pressure to paper and the transport roller to provide the transport power of the transport roller to paper.
14	Transport roller 5 (Drive)	Transports paper to the registration roller. Paper is buckled between the registration roller and this roller to correct the paper skew and the relation between images and paper.
15	Registration roller (Drive)	Transports paper to the transfer section. / Controls the transport timing of paper and adjusts relative relations between the image and paper.
16	Registration roller (Idle)	Apply a pressure to paper and the registration roller to provide the transport power of the transport roller to paper.
17	Transport roller 6 (Drive)	Transports paper transported from the fusing section to the paper exit section and the switchback section.
18	Transport roller 6 (Idle)	Apply a pressure to paper and the transport roller to provide the transport power of the transport roller to paper.
19	Transport roller 7 (Idle)	Apply a pressure to paper and the transport roller to provide the transport power of the transport roller to paper.
20	Transport roller 7 (Drive)	Transports paper transported from the switchback section to the transport roller 8.
21	Transport roller 8 (Idle)	Apply a pressure to paper and the transport roller to provide the transport power of the transport roller to paper.
22	Transport roller 8 (Drive)	Transports paper transported from the transport roller 7 to the transport roller 9.
23	Transport roller 9 (Idle)	Apply a pressure to paper and the transport roller to provide the transport power of the transport roller to paper.
24	Transport roller 9 (Drive)	Transports paper transported from the transport roller 8 to the transport roller 5.
25	Paper exit roller 1 (Idle)	Apply a pressure to paper and the paper exit roller to provide the transport power of the paper exit roller to paper.
26	Paper exit roller 1 (Drive)	Transports paper to the left paper exit section.
27	Paper exit roller 2 (Idle)*	Apply a pressure to paper and the paper exit roller to provide the transport power of the paper exit roller to paper.
28	Paper exit roller 2 (Drive)*	Discharges paper to the right paper exit tray.
29	Fusing roller (F1)	Heats the fusing belt.
30	Fusing roller (F2)	The cushion layer of the roller forms a wide nip between the fusing belt and fusing roller (B). (23cpm/26cpm/31cpm machine)/Heats the paper surface to fuse toner on the paper. (20cpm machine)
31	Fusing roller (B)	Heats the paper surface to fuse toner on the paper.
32	Fusing cleaning roller	Cleans the fusing roller (B) and the fusing belt.
33	Document pickup roller (RSPF)	Feeds a document to the paper feed roller.
34	Paper feed roller (RSPF)	Feeds a document to the transport section. Makes a buckle on paper between the registration roller and this roller to correct the start position of document skew and document image scan.
35	Separation roller (RSPF)	Separates a document to prevent double-feeding.
36	Transport auxiliary roller (RSPF)	Reduces friction between a document and the paper guide to transport the document smoothly to the registration roller.
37	Registration roller (Drive) (RSPF)	Transports a document to the transport roller 2. / Controls the transport timing of the document and adjusts the document scanning timing.
38	Registration roller (Idle) RSPF)	Apply a pressure to a document and the registration roller to provide the transport power of the transport roller to the document.
39	Transport roller 2 (Idle) (RSPF)	Apply a pressure to a document and the transport roller to provide the transport power of the transport roller to the document.
40	Transport roller 2 (Drive) (RSPF)	Transports a document transported from the registration roller to the document scanning section.
41	Transport roller 3 (Idle) (RSPF)	Apply a pressure to a document and the transport roller to provide the transport power of the transport roller to the document.
42	Transport roller 3 (Drive) (RSPF)	Transports a document transported from the document scanning section to the paper exit roller.
43	Paper exit roller (Idle) (RSPF)	Apply a pressure to a document and the paper exit roller to provide the transport power of the paper exit roller to the document.
44	Paper exit roller (Drive) (RSPF)	Discharges a document. Switchbacks the document and transports it to the registration roller when scanning the back surface.

* 18cpm machine are not installed.

B. 36cpm machine

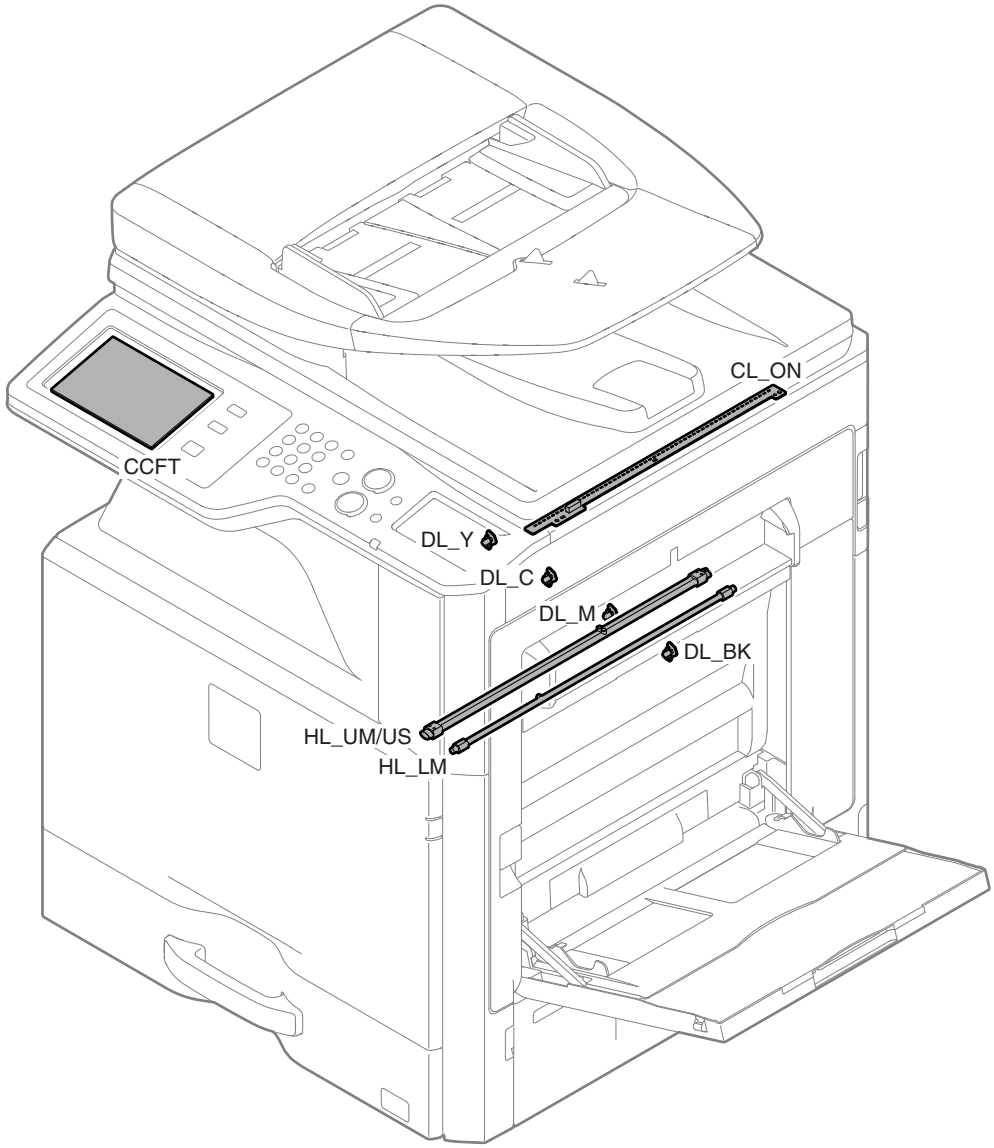


No.	Name	Function/Operation
1	Transport roller 1 (Idle)	Apply a pressure to paper and the transport roller to provide the transport power of the transport roller to paper.
2	Transport roller 1 (Drive)	Transports paper fed from the paper feed desk tray to the transport roller 4.
3	Paper pickup roller (No. 1 paper feed tray)	Feeds paper to the paper feed roller.
4	Separation roller (No. 1 paper feed tray)	Separates paper to prevent double-feeding.
5	Paper feed roller (No. 1 paper feed tray)	Feeds paper to the paper transport section.
6	Transport roller 2 (Idle)	Apply a pressure to paper and the transport roller to provide the transport power of the transport roller to paper.
7	Transport roller 2 (Drive)	Transports paper fed from the paper feed tray 1 to the transport roller 3.
8	Transport roller 3	Transports paper from the transport roller 2 to the transport roller 4.
9	Paper feed roller (Manual paper feed tray)	Feeds paper to the paper transport section.
10	Separation roller (Manual paper feed tray)	Separates paper to prevent double-feeding.
11	Transport roller 4 (Idle)	Apply a pressure to paper and the transport roller to provide the transport power of the transport roller to paper.
12	Transport roller 4 (Drive)	Transports paper from the transport rollers 1 and 3 to the transport roller 5.
13	Transport roller 5 (Idle)	Apply a pressure to paper and the transport roller to provide the transport power of the transport roller to paper.
14	Transport roller 5 (Drive)	Transports paper to the registration roller. Paper is buckled between the registration roller and this roller to correct the paper skew and the relation between images and paper.
15	Registration roller (Drive)	Transports paper to the transfer section. / Controls the transport timing of paper and adjusts relative relations between the image and paper.
16	Registration roller (Idle)	Apply a pressure to paper and the registration roller to provide the transport power of the transport roller to paper.
17	Transport roller 6 (Drive)	Transports paper transported from the fusing section to the paper exit section and the switchback section.
18	Transport roller 6 (Idle)	Apply a pressure to paper and the transport roller to provide the transport power of the transport roller to paper.
19	Transport roller 7 (Idle)	Apply a pressure to paper and the transport roller to provide the transport power of the transport roller to paper.
20	Transport roller 7 (Drive)	Transports paper transported from the switchback section to the transport roller 8.
21	Transport roller 8 (Idle)	Apply a pressure to paper and the transport roller to provide the transport power of the transport roller to paper.
22	Transport roller 8 (Drive)	Transports paper transported from the transport roller 7 to the transport roller 9.
23	Transport roller 9 (Idle)	Apply a pressure to paper and the transport roller to provide the transport power of the transport roller to paper.
24	Transport roller 9 (Drive)	Transports paper transported from the transport roller 8 to the transport roller 5.
25	Paper exit roller 1 (Idle)	Apply a pressure to paper and the paper exit roller to provide the transport power of the paper exit roller to paper.
26	Paper exit roller 1 (Drive)	Transports paper to the left paper exit section.
27	Paper exit roller 2 (Idle)	Apply a pressure to paper and the paper exit roller to provide the transport power of the paper exit roller to paper.
28	Paper exit roller 2 (Drive)	Discharges paper to the right paper exit tray.
29	Fusing roller (F1)	Heats the fusing belt.
30	Fusing roller (F2)	The cushion layer of the roller forms a wide nip between the fusing belt and fusing roller (B).
31	Fusing roller (B)	Heats the back surface of paper to fuse toner on the paper.
32	Fusing web roller	Cleans the fusing roller (B) and the fusing belt.
33	Document pickup roller (RSPF)	Feeds a document to the paper feed roller.
34	Paper feed roller (RSPF)	Feeds a document to the transport section. Makes a buckle on paper between the registration roller and this roller to correct the start position of document skew and document image scan.
35	Separation roller (RSPF)	Separates a document to prevent double-feeding.
36	Transport auxiliary roller (RSPF)	Reduces friction between a document and the paper guide to transport the document smoothly to the registration roller.
37	Registration roller (Drive) (RSPF)	Transports a document to the transport roller 2. / Controls the transport timing of the document and adjusts the document scanning timing.
38	Registration roller (Idle) RSPF)	Apply a pressure to a document and the registration roller to provide the transport power of the transport roller to the document.
39	Transport roller 2 (Idle) (RSPF)	Apply a pressure to a document and the transport roller to provide the transport power of the transport roller to the document.
40	Transport roller 2 (Drive) (RSPF)	Transports a document transported from the registration roller to the document scanning section.
41	Transport roller 3 (Idle) (RSPF)	Apply a pressure to a document and the transport roller to provide the transport power of the transport roller to the document.
42	Transport roller 3 (Drive) (RSPF)	Transports a document transported from the document scanning section to the paper exit roller.
43	Paper exit roller (Idle) (RSPF)	Apply a pressure to a document and the paper exit roller to provide the transport power of the paper exit roller to the document.
44	Paper exit roller (Drive) (RSPF)	Discharges a document. Switchbacks the document and transports it to the registration roller when scanning the back surface.
45	Transport roller 10 (Drive)	Transports paper from manual paper feed section to the transport roller 9.
46	Transport roller 10 (Idle)	Apply a pressure to paper and the transport roller to provide the transport power of the transport roller to paper.
47	Paper exit roller 3 (Drive)	Transports paper to paper exit roller 2 or transport roller 7.
48	Paper exit roller 3 (Idle)	Apply a pressure to paper and the paper exit roller to provide the transport power of the paper exit roller to paper.

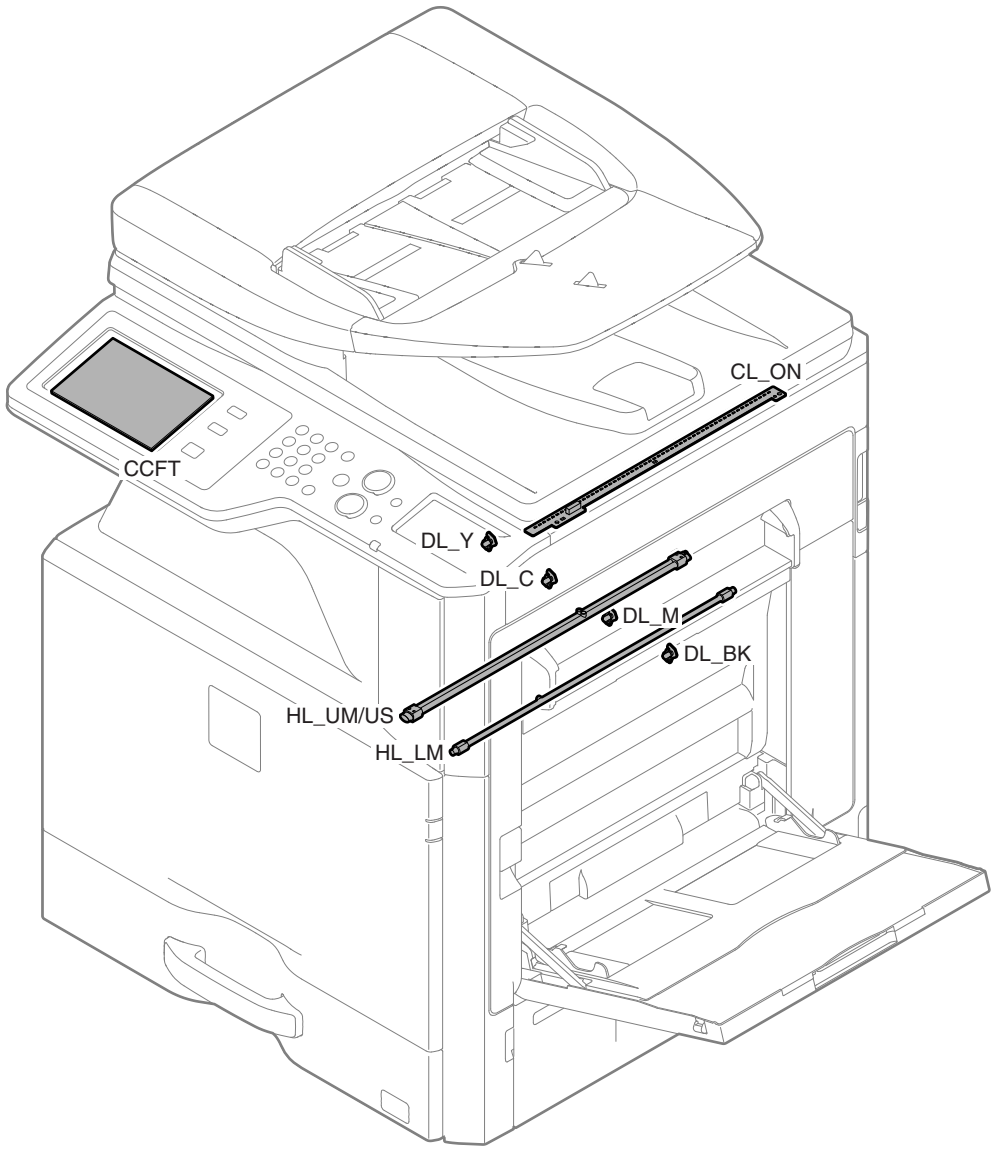
10. Lamps

A. 18cpm/20cpm/23cpm/31cpm(G) machine

(1) 18cpm/20cpm machine

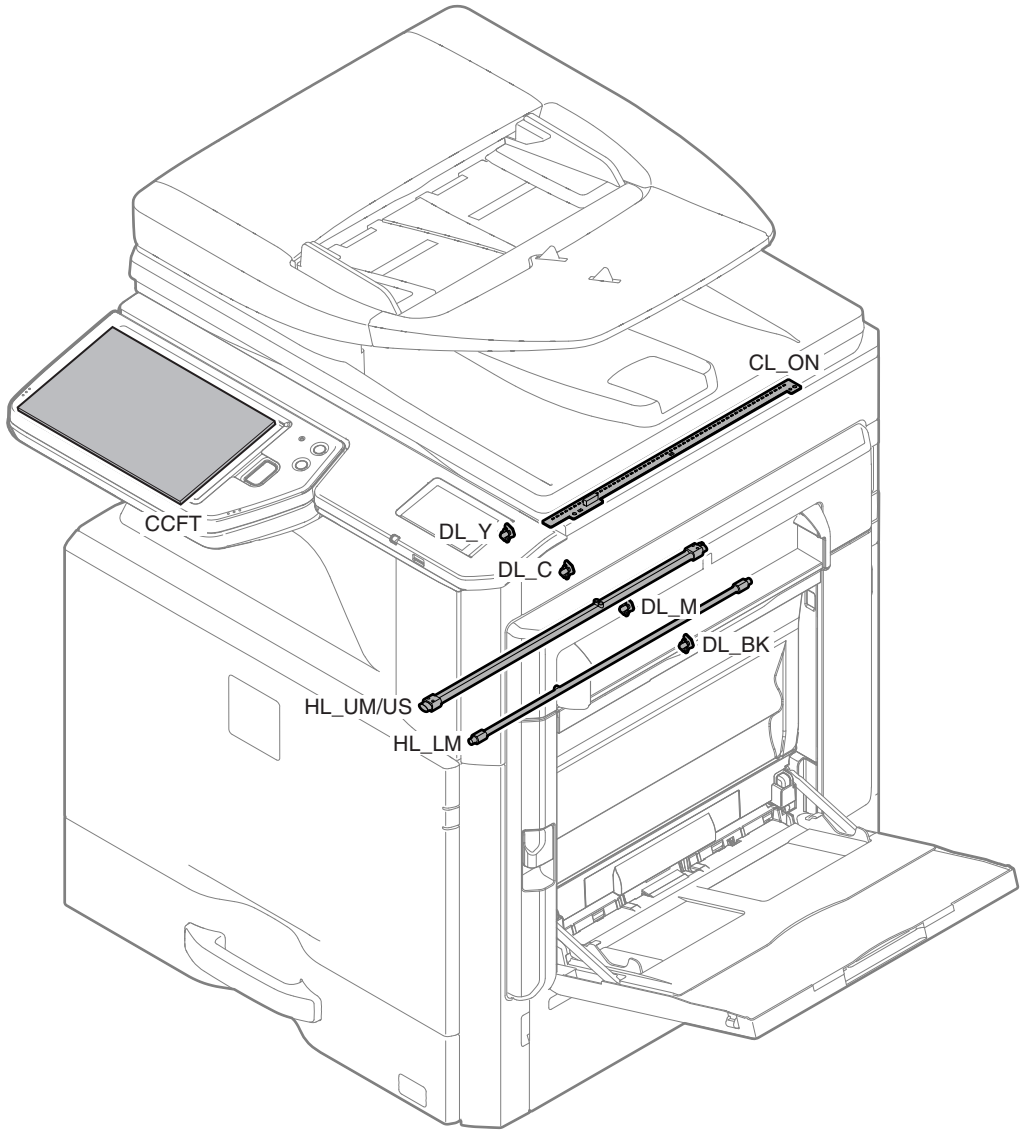


(2) 23cpm/31cpm(G) machine



Signal name	Name	Type	Function/Operation
CCFT	LCD backlight	LED	LCD backlight
CL_ON	Scanner lamp	LED	Radiates light onto a document for the CCD to scan the document image.
DL_BK	Discharge lamp (K)	LED	Discharges electric charges on the OPC drum (K).
DL_C	Discharge lamp (C)	LED	Discharges electric charges on the OPC drum (C).
DL_M	Discharge lamp (M)	LED	Discharges electric charges on the OPC drum (M).
DL_Y	Discharge lamp (Y)	LED	Discharges electric charges on the OPC drum (Y).
HL_LM	Heater lamp (HL_LM)	Halogen lamp	Heats the fusing roller (B).
HL_UM/US	Heater lamp (HL_UM/US)	Halogen lamp	Heats the fusing roller (F1) and the fusing belt. (23cpm/26cpm/31cpm(G) machine)/ Heats the fusing roller (F). Heats the paper surface to fuse toner on the paper. (20cpm machine)

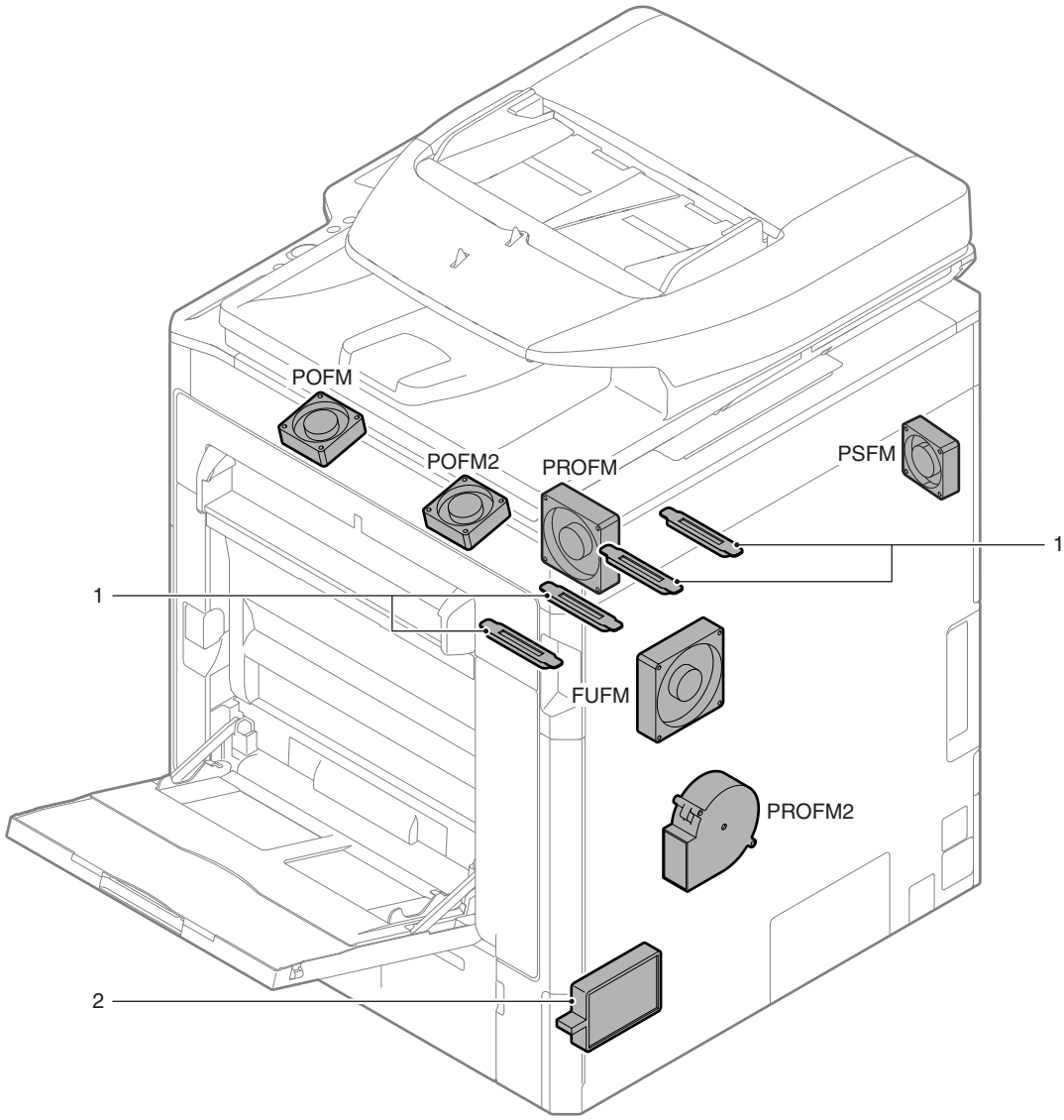
B. 26cpm/36cpm/31cpm(A) machine



Signal name	Name	Type	Function/Operation
CCFT	LCD backlight	LED	LCD backlight
CL_ON	Scanner lamp	LED	Radiates light onto a document for the CCD to scan the document image.
DL_BK	Discharge lamp (K)	LED	Discharges electric charges on the OPC drum (K).
DL_C	Discharge lamp (C)	LED	Discharges electric charges on the OPC drum (C).
DL_M	Discharge lamp (M)	LED	Discharges electric charges on the OPC drum (M).
DL_Y	Discharge lamp (Y)	LED	Discharges electric charges on the OPC drum (Y).
HL_LM	Heater lamp (HL_LM)	Halogen lamp	Heats the fusing roller (B).
HL_UM/US	Heater lamp (HL_UM/US)	Halogen lamp	Heats the fusing roller (F1) and the fusing belt.

11. Fans and filter

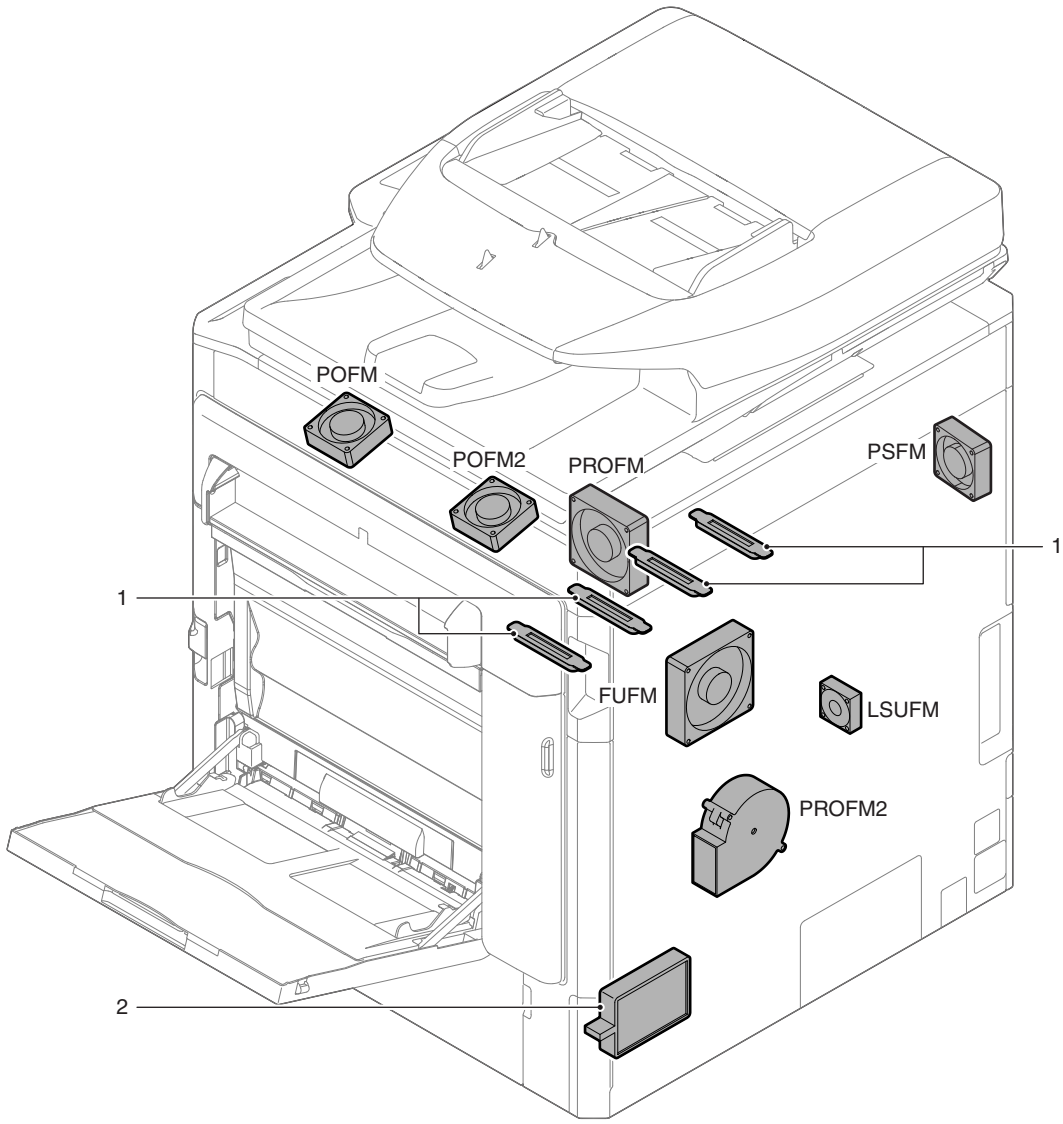
A. 18cpm/20cpm/23cpm/26cpm/31cpm machine



Signal name	Name	Function/Operation
FUFM	Fusing cooling fan	Cools the fusing section and the paper exit section.
POFM	Paper exit cooling fan	Cools the fusing section and the paper exit section.
POFM2	Paper exit cooling fan	Cools the fusing section and the paper exit section.
PROFM	Process fan motor 1	Discharges air and cools the process section.
PROFM2	Process fan motor 2	Discharges air and cools the process section.
PSFM	Power cooling fan motor	Cools the power unit.

No.	Name	Function/Operation
1	Toner filter	Prevents toner splash.
2	Ozone filter	Absorbs ozone generated in the image process section.

B. 36cpm machine

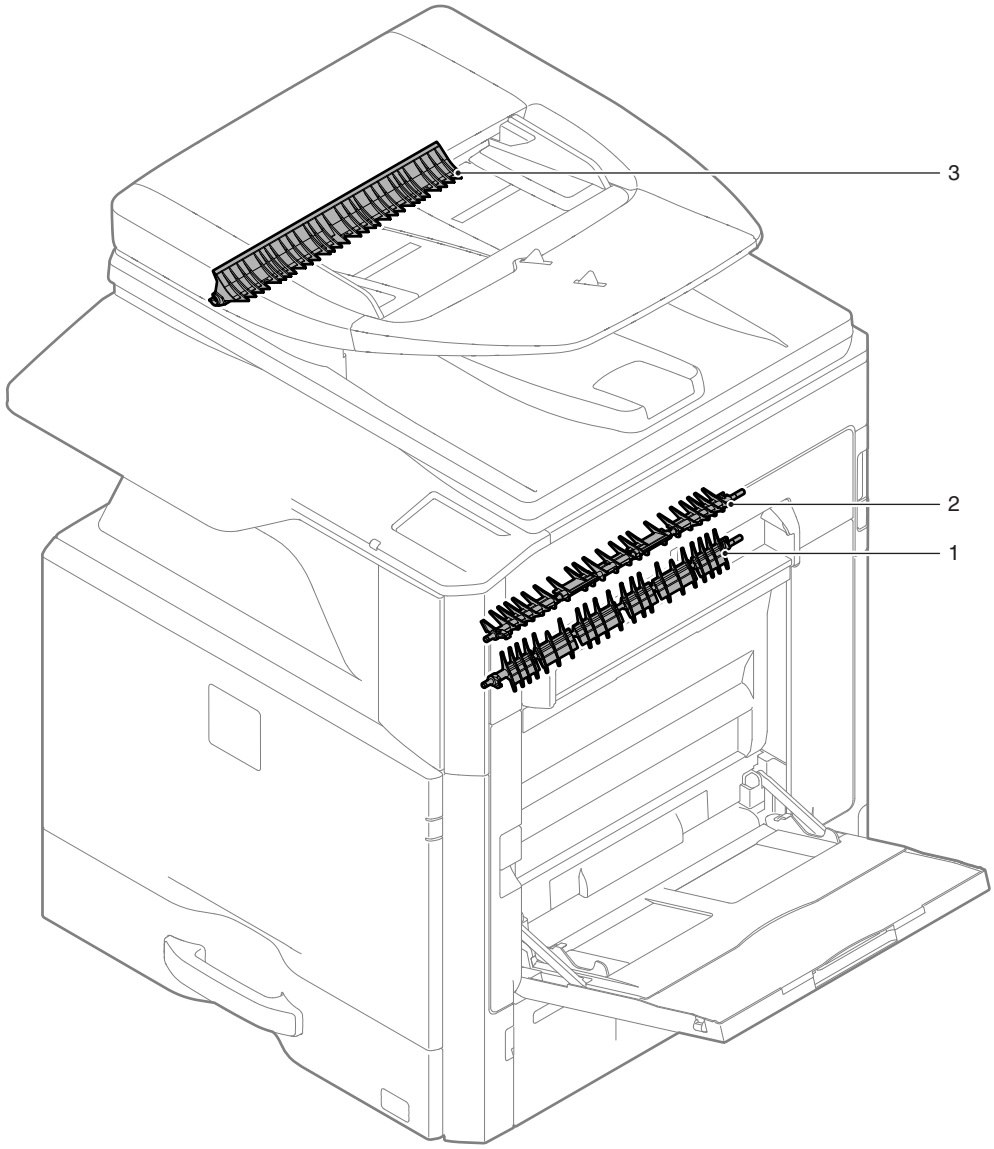


Signal name	Name	Function/Operation
FUFM	Fusing cooling fan	Cools the fusing section and the paper exit section.
LSUFM	LSU cooling fan	Cools the LSU.
POFM	Paper exit cooling fan	Cools the fusing section and the paper exit section.
POFM2	Paper exit cooling fan	Cools the fusing section and the paper exit section.
PROFM	Process fan motor 1	Discharges air and cools the process section.
PROFM2	Process fan motor 2	Discharges air and cools the process section.
PSFM	Power cooling fan motor	Cools the power unit.

No.	Name	Function/Operation
1	Toner filter	Prevents toner splash.
2	Ozone filter	Absorbs ozone generated in the image process section.

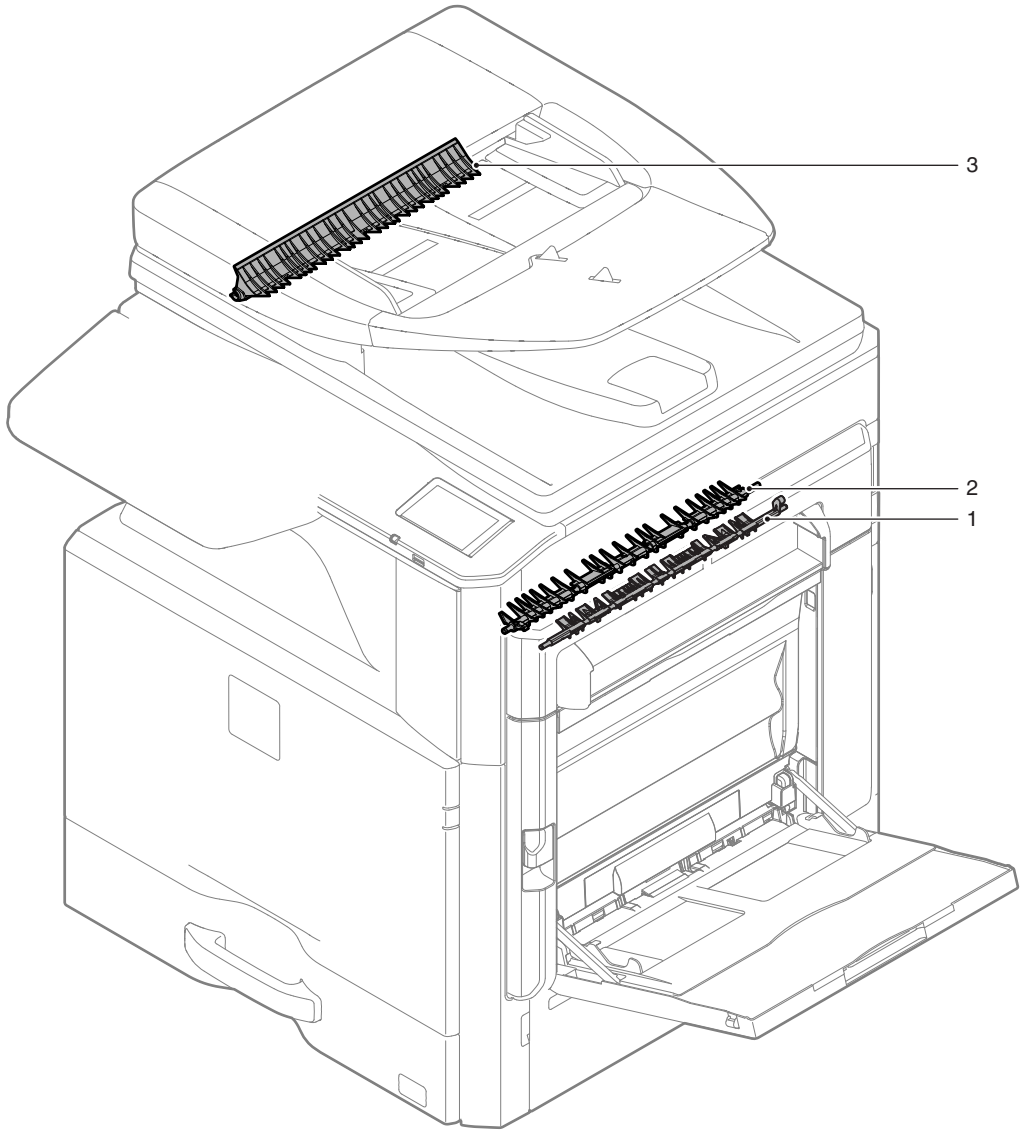
12. Gates

A. 18cpm/20cpm/23cpm/26cpm/31cpm machine



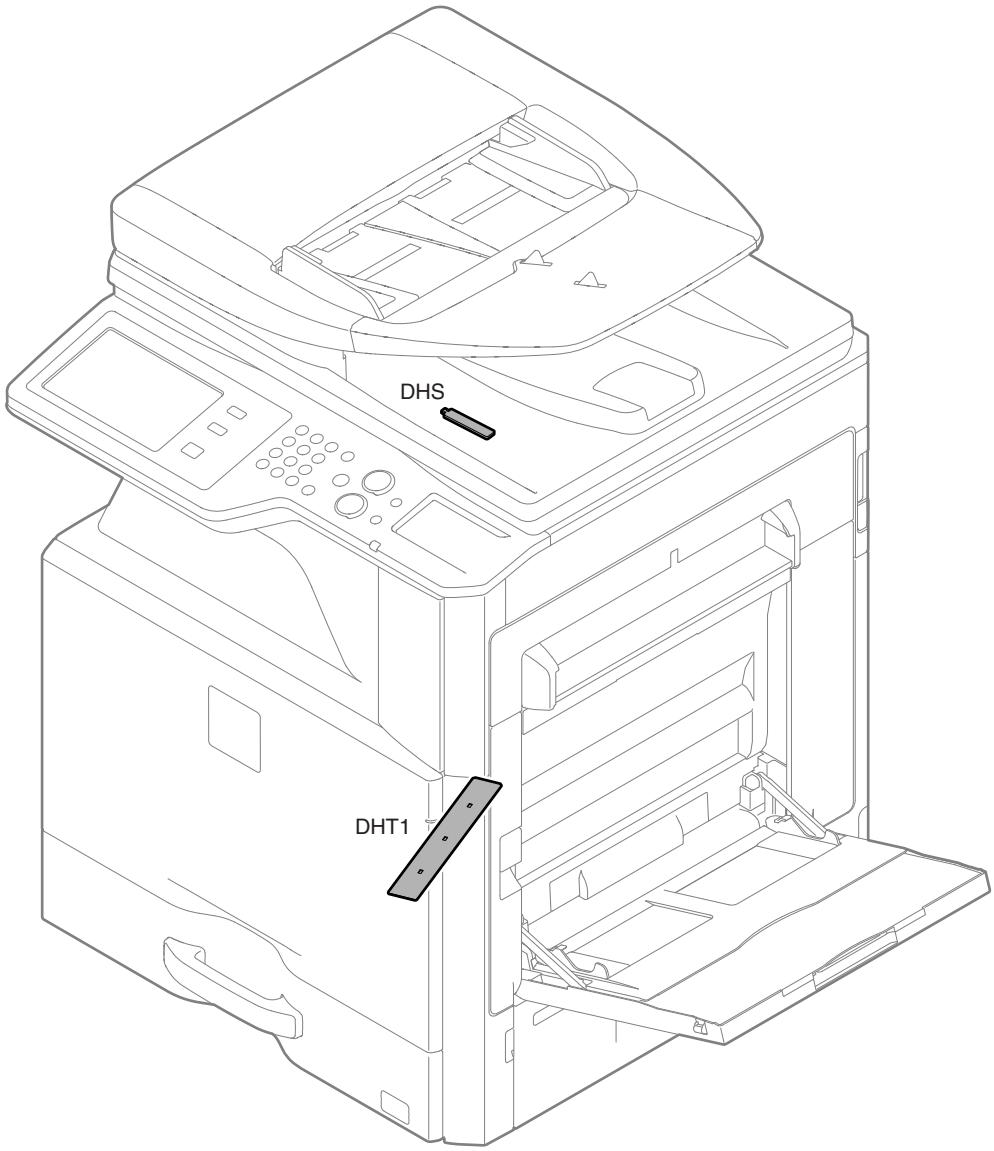
No.	Name	Function/Operation
1	Switchback gate	Switchbacks paper to transport it to the ADU section.
2	Paper exit gate	Switchbacks paper to transport it to the right paper exit tray.
3	Document reverse gate	Reverses a document when scanning images on the back surface.

B. 36cpm machine



No.	Name	Function/Operation
1	Switchback gate	Switchbacks paper to transport to the ADU section or the right paper exit tray.
2	Paper exit gate	Selects the paper path: to transport paper to the ADU section or to the right tray.
3	Document reverse gate	Reverses a document when scanning images on the back surface.

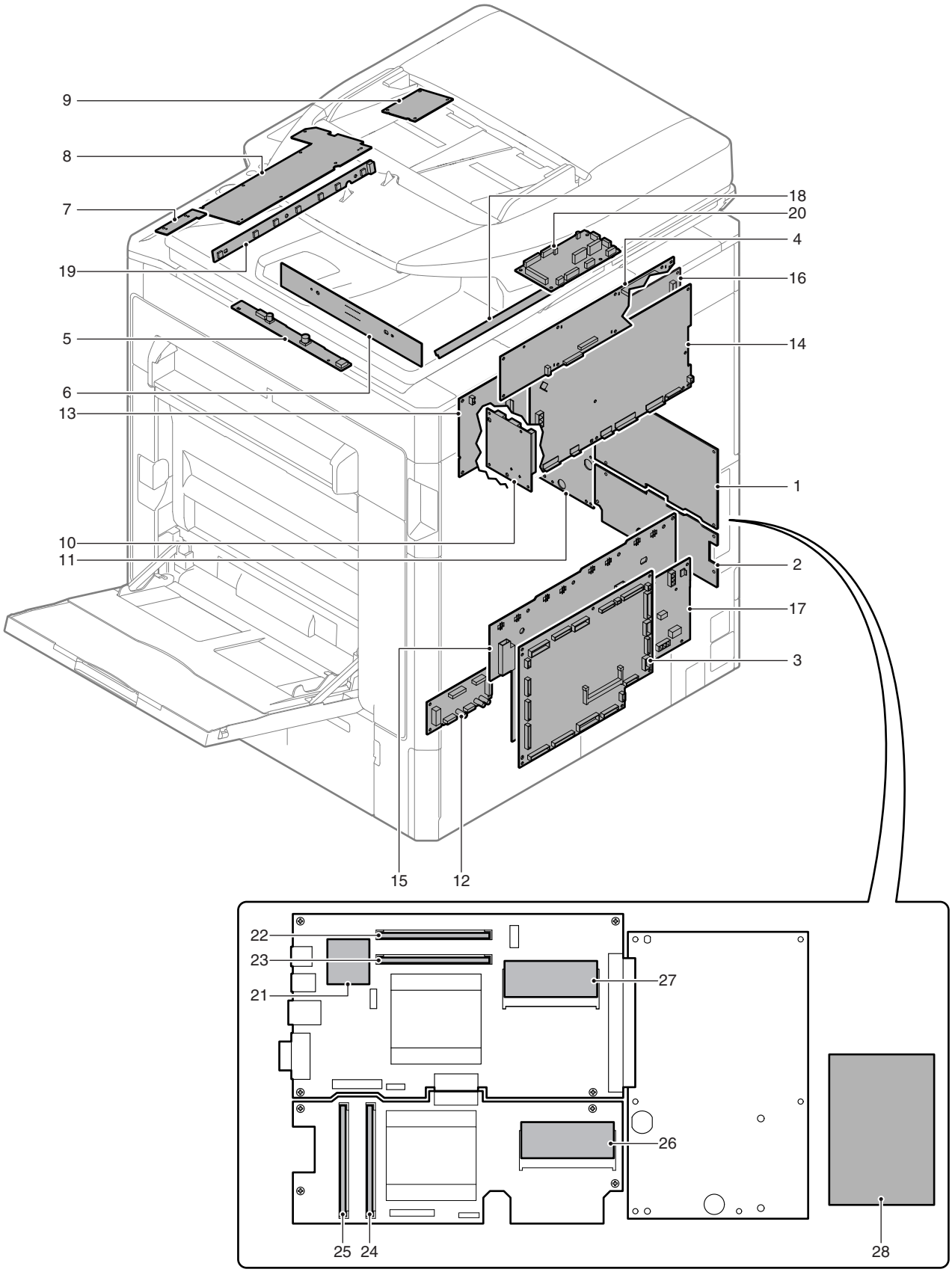
13. Heater



Signal name	Name	Function/Operation
DHS	Scanner dehumidifying heater	Dehumidifies the scanner section to prevent it from dew condensation.
DHT1	Paper dehumidifying heater (Paper feed tray 1)	Dehumidifies the paper feed tray section to prevent paper from absorbing humidity which causes degraded image quality and paper jams.

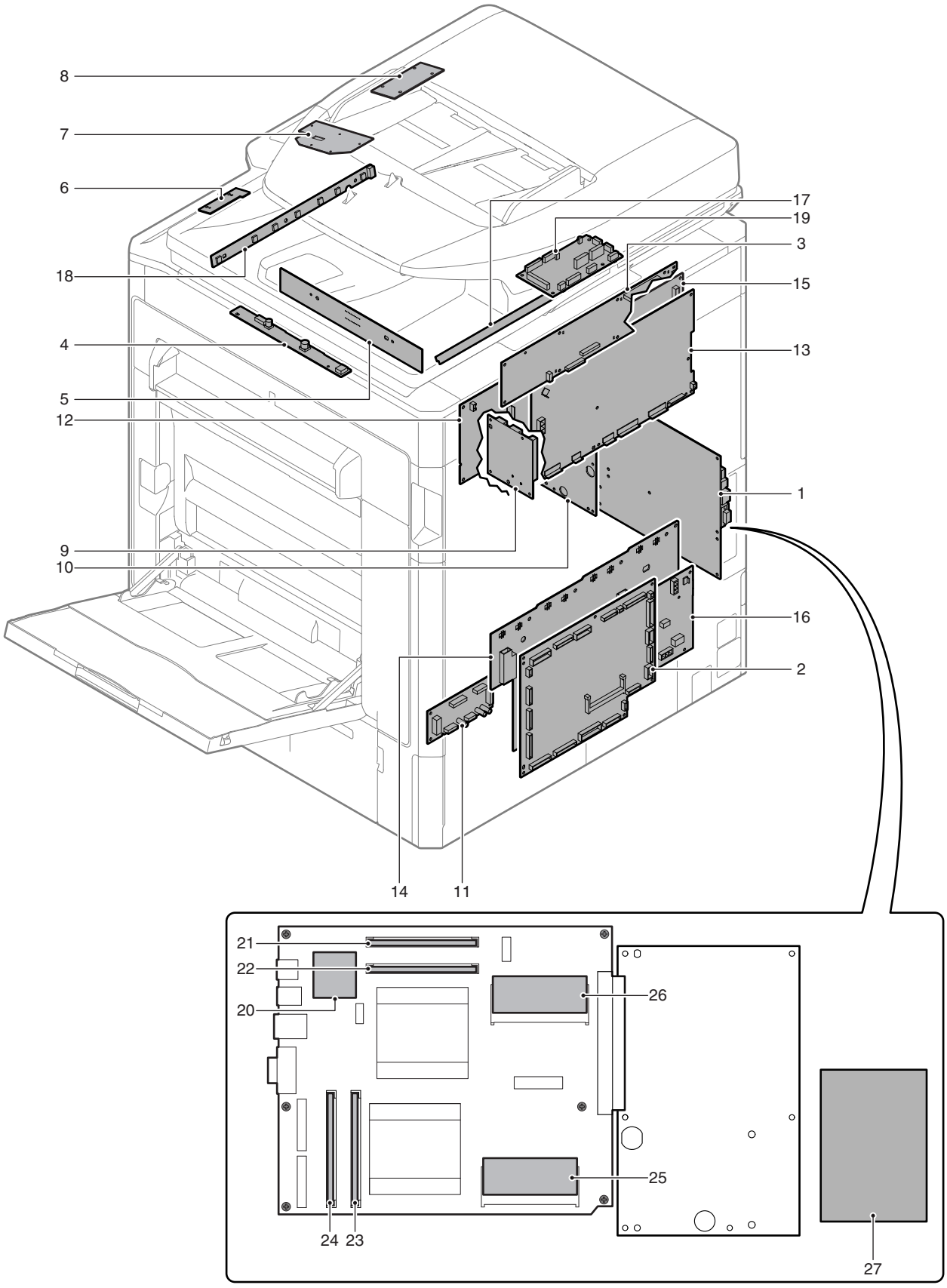
14. PWB/Memory device

A. 18cpm/20cpm/23cpm/31cpm(G) machine



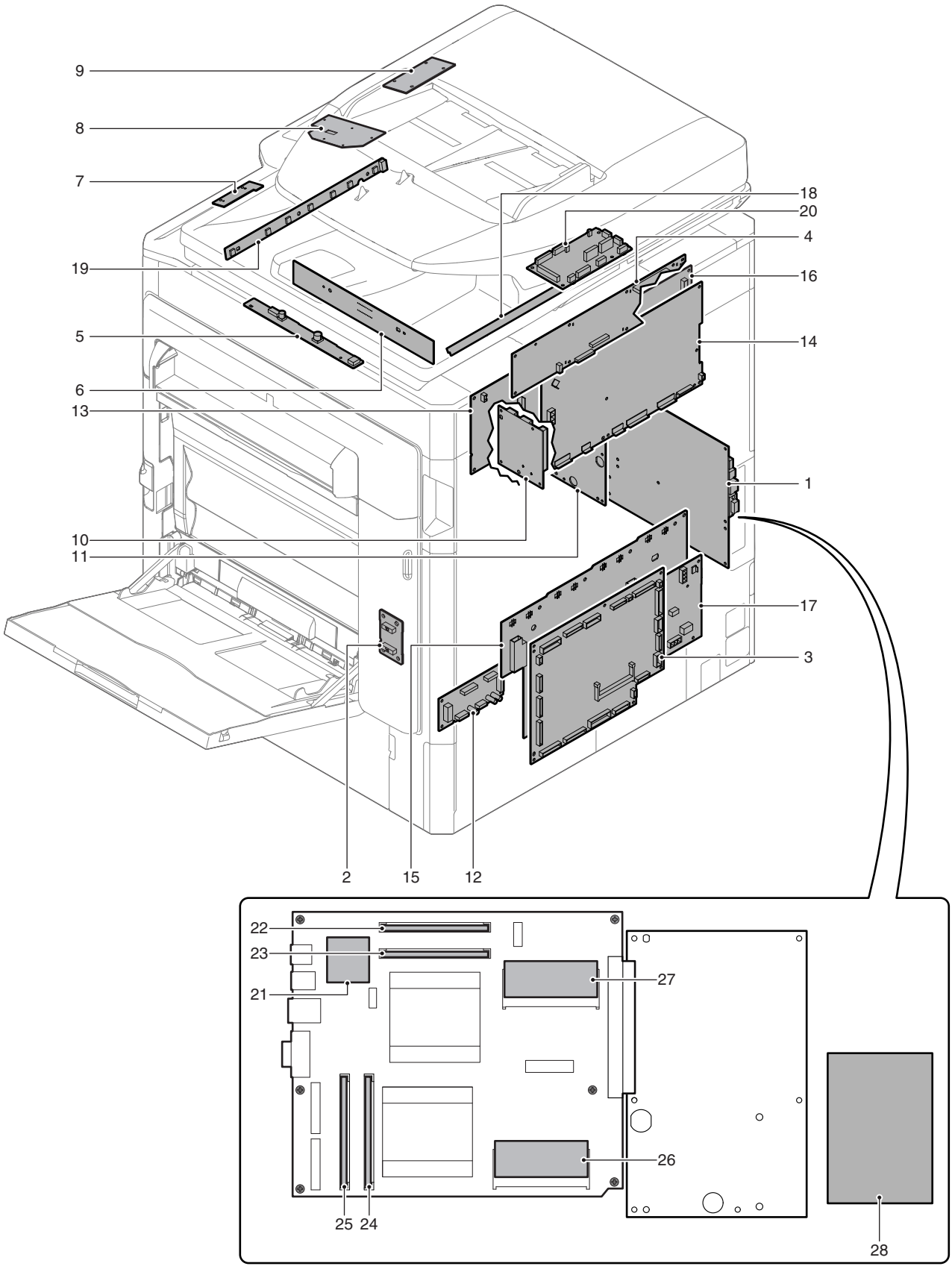
No.	Name	Function/Operation
1	MFP control PWB	Controls image data (compression, decompression, and filing), and controls the whole machine.
2	Printer control PWB	Converts print data (PCL/PS) into image data.
3	PCU PWB	Controls the engine section.
4	SCU PWB	Controls the scanner and the operation section.
5	Scanner lamp drive PWB	Drives the scanner lamp
6	CCD PWB	Scans document images and performs A/D conversion of the scanning signal.
7	USB I/F PWB	USB I/F
8	KEY PWB	Outputs the key operation signal.
9	LVDS PWB	Converts the display data signal to the LCD display signal. Controls the touch panel.
10	LD PWB	Drives the laser diode and controls the power.
11	LSU mother PWB	Controls the LSU. Generates the video data. Interfaces the MFP PWB, the scanner control PWB, the operation PWB, the PCU PWB, and the FAX unit.
12	Driver PWB	Drives the motor.
13	HL control PWB	Drives the heater lamp.
14	DC POWER PWB	Generates the DC voltage.
15	High voltage PWB (MC/DV PWB)	Generates the main charger voltage and the DV bias voltage.
16	High voltage PWB (TC PWB)	Generates the transfer voltage.
17	Dehumidifier heater control PWB	Controls the dehumidifier heater.
18	Document size detection PWB (Light emitting)	Drives the LED for the document size detection.
19	Document size detection PWB (Light receiving)	Outputs the document size detection signal.
20	RSPF driver PWB	Drives the motor, the solenoid, and the clutch in the RSPF section.
21	SD card memory	Stores the MFP PWB program data, the FAX image data, and the font data.
22	DIMM memory 1	Image memory for the MFP PWB
23	DIMM memory 2	Not used.
24	DIMM memory 3	Memory for the printer
25	DIMM memory 4	Memory for the XPS printer
26	Printer Flash memory	Stores the printer program data.
27	DSK Flash memory	Stores the DSK program data.
28	HDD	Stores the MFP PWB program data, the filing data, the e-manual data, the watermark data, the log data, and the authentication data. Also used as a work memory.

B. 26cpm/31cpm(A) machine



No.	Name	Function/Operation
1	MFP control PWB	Controls image data (compression, decompression, and filing), and controls the whole machine. Converts print data (PCL/PS) into image data.
2	PCU PWB	Controls the engine section.
3	SCU PWB	Controls the scanner and the operation section.
4	Scanner lamp drive PWB	Drives the scanner lamp
5	CCD PWB	Scans document images and performs A/D conversion of the scanning signal.
6	USB I/F PWB	USB I/F
7	KEY PWB	Outputs the key operation signal.
8	LVDS PWB	Converts the display data signal to the LCD display signal. Controls the touch panel.
9	LD PWB	Drives the laser diode and controls the power.
10	LSU mother PWB	Controls the LSU. Generates the video data. Interfaces the MFP PWB, the scanner control PWB, the operation PWB, the PCU PWB, and the FAX unit.
11	Driver PWB	Drives the motor.
12	HL control PWB	Drives the heater lamp.
13	DC POWER PWB	Generates the DC voltage.
14	High voltage PWB (MC/DV PWB)	Generates the main charger voltage and the DV bias voltage.
15	High voltage PWB (TC PWB)	Generates the transfer voltage.
16	Dehumidifier heater control PWB	Controls the dehumidifier heater.
17	Document size detection PWB (Light emitting)	Drives the LED for the document size detection.
18	Document size detection PWB (Light receiving)	Outputs the document size detection signal.
19	RSPF driver PWB	Drives the motor, the solenoid, and the clutch in the RSPF section.
20	SD card memory	Stores the MFP PWB program data, the FAX image data, and the font data.
21	DIMM memory 1	Image memory for the MFP PWB
22	DIMM memory 2	Not used.
23	DIMM memory 3	Memory for the printer
24	DIMM memory 4	Memory for the XPS printer
25	Printer Flash memory	Stores the printer program data.
26	DSK Flash memory	Stores the DSK program data.
27	HDD	Stores the MFP PWB program data, the filing data, the e-manual data, the watermark data, the log data, and the authentication data. Also used as a work memory.

C. 36cpm machine

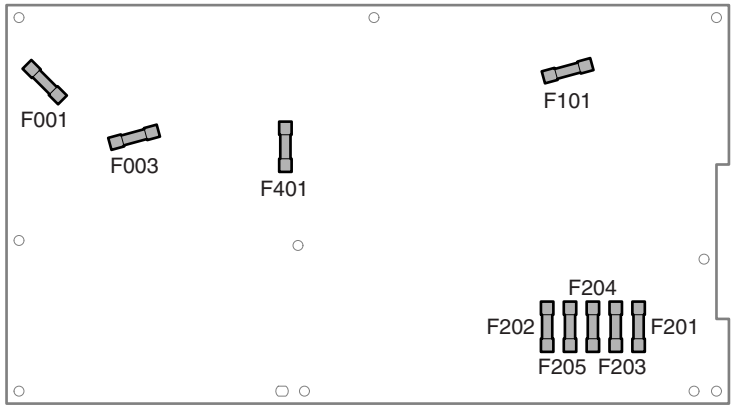


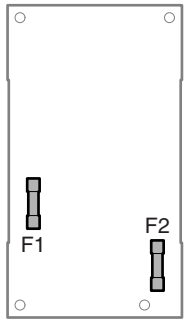
No.	Name	Function/Operation
1	MFP control PWB	Controls image data (compression, decompression, and filing), and controls the whole machine. Converts print data (PCL/PS) into image data.
2	Right door PWB	Interfaces the right door unit signal.
3	PCU PWB	Controls the engine section.
4	SCU PWB	Controls the scanner and the operation section.
5	Scanner lamp drive PWB	Drives the scanner lamp
6	CCD PWB	Scans document images and performs A/D conversion of the scanning signal.
7	USB I/F PWB	USB I/F
8	KEY PWB	Outputs the key operation signal.
9	LVDS PWB	Converts the display data signal to the LCD display signal. Controls the touch panel.
10	LD PWB	Drives the laser diode and controls the power.
11	LSU mother PWB	Controls the LSU. Generates the video data. Interfaces the MFP PWB, the scanner control PWB, the operation PWB, the PCU PWB, and the FAX unit.
12	Driver PWB	Drives the motor.
13	HL control PWB	Drives the heater lamp.
14	DC POWER PWB	Generates the DC voltage.
15	High voltage PWB (MC/DV PWB)	Generates the main charger voltage and the DV bias voltage.
16	High voltage PWB (TC PWB)	Generates the transfer voltage.
17	AC POWER PWB	Controls the primary side power.
18	Document size detection PWB (Light emitting)	Drives the LED for the document size detection.
19	Document size detection PWB (Light receiving)	Outputs the document size detection signal.
20	RSPF driver PWB	Drives the motor, the solenoid, and the clutch in the RSPF section.
21	SD card memory	Stores the MFP PWB program data, the FAX image data, and the font data.
22	DIMM memory 1	Image memory for the MFP PWB
23	DIMM memory 2	Not used.
24	DIMM memory 3	Memory for the printer
25	DIMM memory 4	Memory for the XPS printer
26	Printer Flash memory	Stores the printer program data.
27	DSK Flash memory	Stores the DSK program data.
28	HDD	Stores the MFP PWB program data, the filing data, the e-manual data, the watermark data, the log data, and the authentication data. Also used as a work memory.

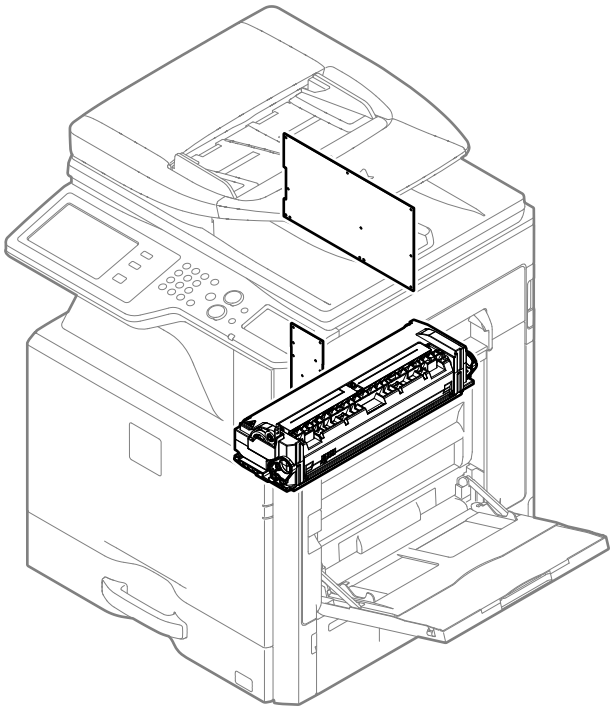
15. Fuses and Thermostats

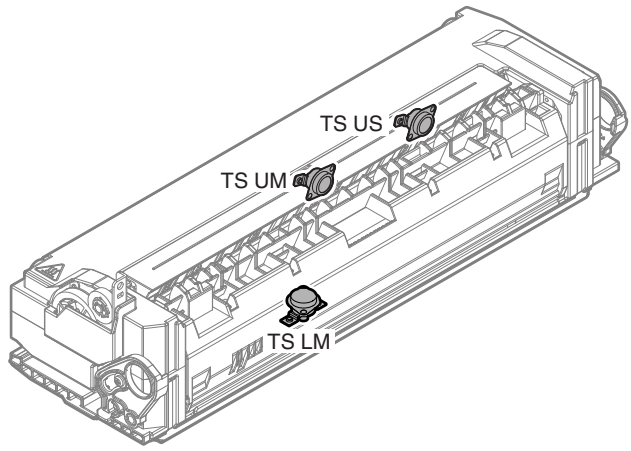
A. 18cpm/20cpm/23cpm/26cpm/31cpm machine

(1) 18cpm/20cpm machine

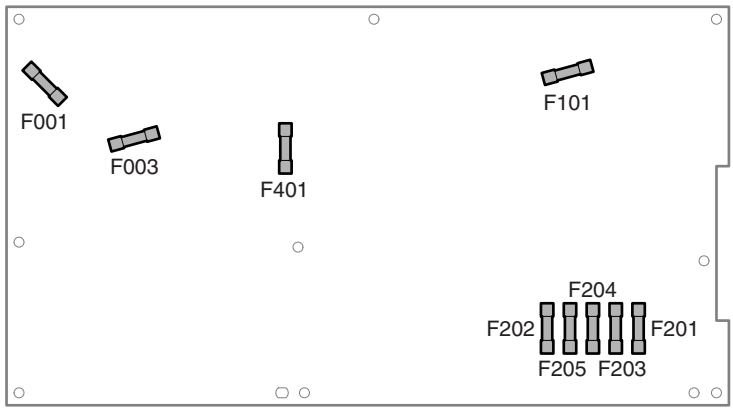


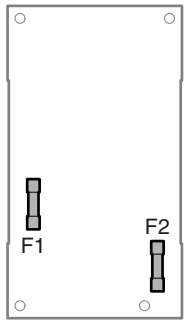


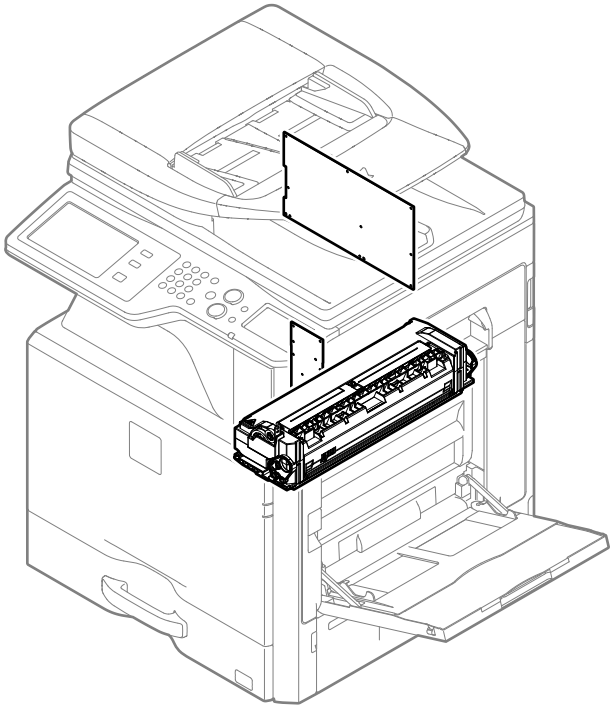


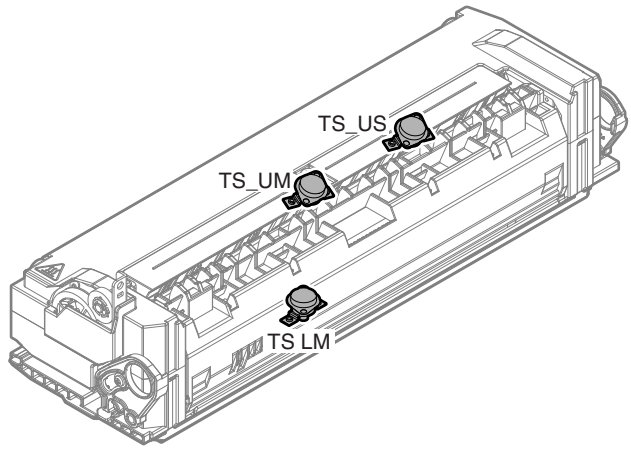


(2) 23cpm/26cpm/31cpm machine





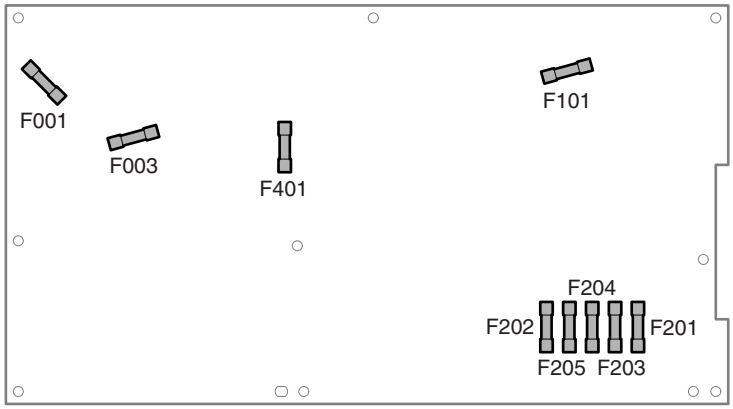


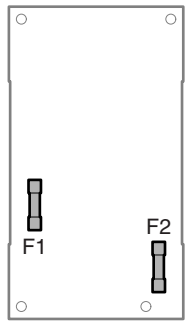


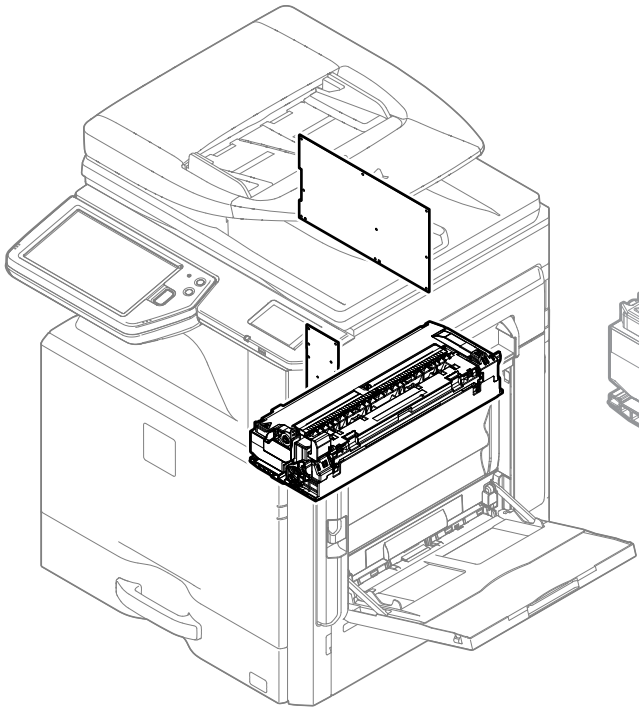
Signal name	Name	100v series	200v series	Section
F1	Fuse	20A 250V	T10AH 250V	AC Power PWB
F2	Fuse	-	T10AH 250V	AC Power PWB
F001	Fuse	T12AH 250V	T6.3AH 250V	DC Power PWB
F003	Fuse	T3.15AH 250V	T3.15AH 250V	DC Power PWB
F101	Fuse	F10AH 250V (F101)	F5AH 250V (F101)	DC Power PWB
F401	Fuse	F3.15AH 250V (F401)	F2AH 250V (F401)	DC Power PWB
F201	Fuse	6.3A	6.3A	DC Power PWB
F202	Fuse	6.3A	6.3A	DC Power PWB
F203	Fuse	6.3A	6.3A	DC Power PWB
F204	Fuse	6.3A	6.3A	DC Power PWB
F205	Fuse	4.0A	4.0A	DC Power PWB

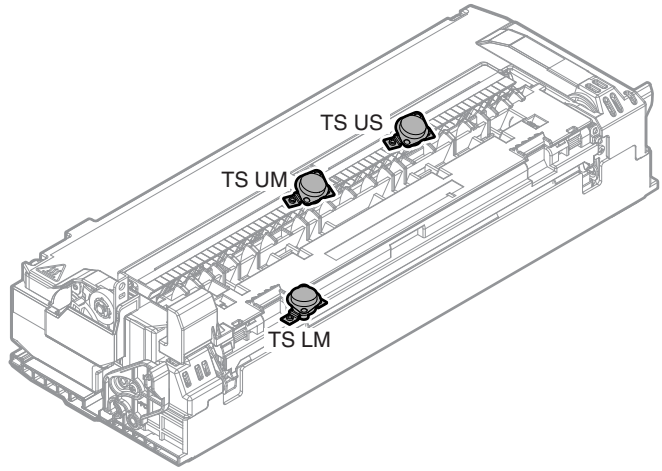
Signal name	Name	Type	Function/Operation
TS LM	Thermostat LM	Mechanical thermostat	Shuts down the heater lamp (HL_LM) circuit when the fusing section is overheated.
TS UM	Thermostat UM	Mechanical thermostat	Shuts down the heater lamp (HL_UM) circuit when the fusing section is overheated. (Center section)
TS US	Thermostat US	Mechanical thermostat	Shuts down the heater lamp (HL_US) circuit when the fusing section is overheated. (Edge section)

B. 36cpm machine





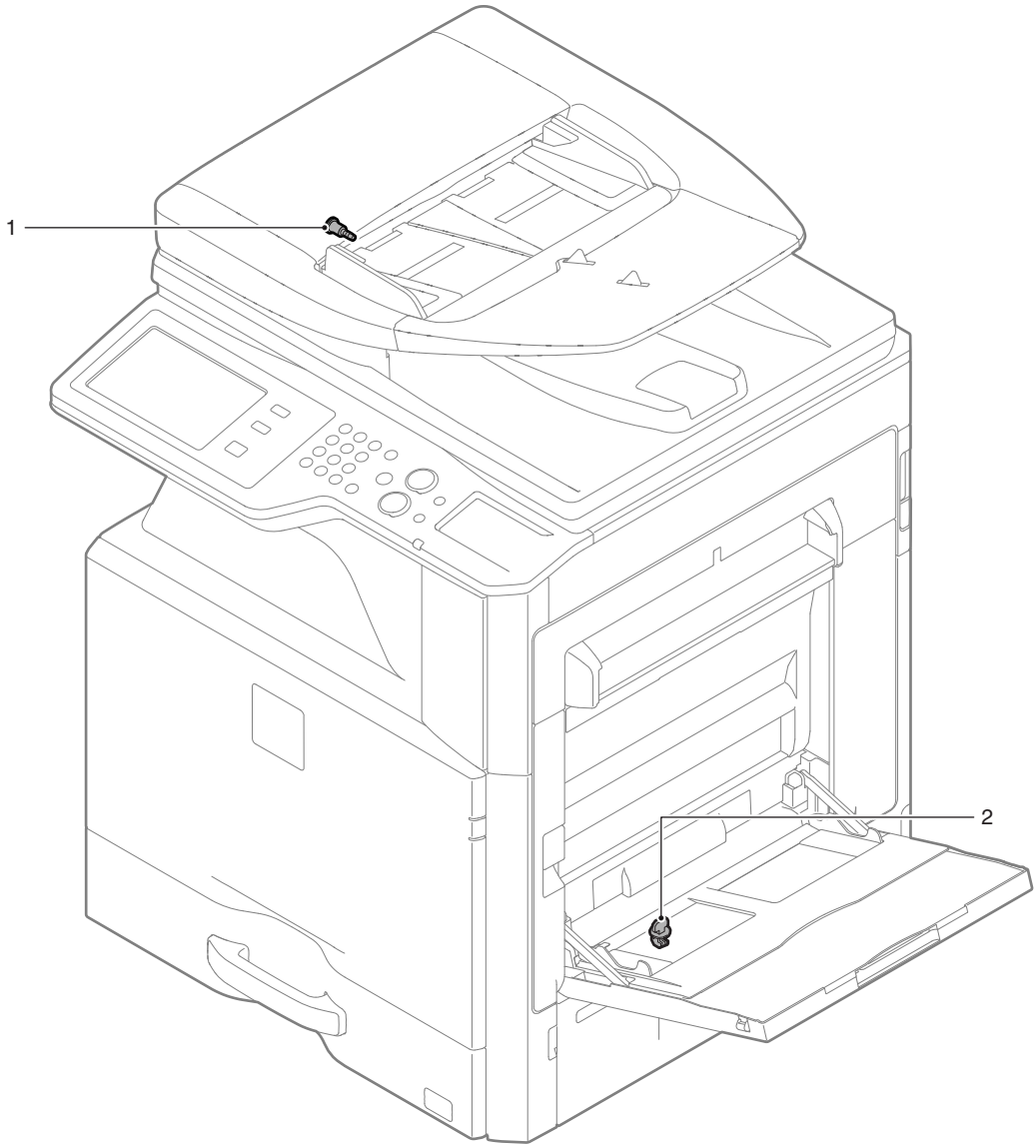




Signal name	Name	100v series	200v series	Section
F1	Fuse	20A 250V	T10AH 250V	AC Power PWB
F2	Fuse	-	T10AH 250V	AC Power PWB
F001	Fuse	T12AH 250V	T6.3AH 250V	DC Power PWB
F003	Fuse	T3.15AH 250V	T3.15AH 250V	DC Power PWB
F101	Fuse	F10AH 250V (F101)	F5AH 250V (F101)	DC Power PWB
F401	Fuse	F3.15AH 250V (F401)	F2AH 250V (F401)	DC Power PWB
F201	Fuse	6.3A	6.3A	DC Power PWB
F202	Fuse	6.3A	6.3A	DC Power PWB
F203	Fuse	6.3A	6.3A	DC Power PWB
F204	Fuse	6.3A	6.3A	DC Power PWB
F205	Fuse	4.0A	4.0A	DC Power PWB

Signal name	Name	Type	Function/Operation
TS LM	Thermostat LM	Mechanical thermostat	Shuts down the heater lamp (HL_LM) circuit when the fusing section is overheated.
TS UM	Thermostat UM	Mechanical thermostat	Shuts down the heater lamp (HL_UM) circuit when the fusing section is overheated. (Center section)
TS US	Thermostat US	Mechanical thermostat	Shuts down the heater lamp (HL_US) circuit when the fusing section is overheated. (Edge section)

16. Lock



No.	Name	Function/Operation
1	Scanner lock	Fixes the scanner during transit.
2	Paper feed tray lift plate lock	Fixes the paper feed tray lift plate during transit.

[4] ADJUSTMENTS AND SETTINGS

1. General

Each adjustment item in the adjustment item list is associated with a specific Job number. Perform the adjustment procedures in the sequence of Job numbers from the smallest to the greatest.

However, there is no need to perform all the adjustment items. Perform only the necessary adjustments according to the need.

Unnecessary adjustments can be omitted. Even in this case, however, the sequence from the smallest to the greatest Job number must be observed.

If the above precaution should be neglected, the adjustment would not complete normally or trouble may occur.

2. Adjustment item list

Job No.	Adjustment item list					Simulation
ADJ 1	Adjust the developing unit	1A	Adjust the developing doctor gap			
		1B	Adjust the developing roller main pole position			
		1C	Toner density control reference value setting			25-2
ADJ 2	Adjusting high voltage values	2A	Adjust the main charger grid voltage			8-2
		2B	Adjust the developing bias voltage			8-1
		2C	Transfer current and voltage adjustment			8-6
ADJ 3	Image density sensor adjustment	3A	Image density sensor calibration			44-13
		3B	Image density sensor adjustment			44-2
ADJ 4	Image lead edge position, image loss, void area, image off-center, image magnification ratio adjustment (Automatic adjustment)	4A	Print image main scanning direction automatic magnification ratio adjustment (Print engine)			50-28
		4B	Print image off-center automatic adjustment (Print engine) (Each paper feed tray)			50-28
		4C	Copy mode image lead edge position, image loss, void area, image off-center, sub scanning direction image magnification ratio automatic adjustment (Scanner) (Document table mode)			50-28
		4D	Copy mode image lead edge position, image loss, void area, image off-center, sub scanning direction image magnification ratio automatic adjustment (Scanner) (RSPF mode)			50-28
ADJ 5	Print engine image distortion adjustment / OPC drum phase adjustment / Color registration adjustment (Print engine section)	5A	Print engine image distortion adjustment (Manual adjustment) / OPC drum phase adjustment (Automatic adjustment) / Color registration adjustment (Automatic adjustment)			50-22
		5B	Print engine image skew (LSU skew) adjustment (Manual adjustment) (No need to adjust normally)			50-20 (64-1)
		5C	Color registration offset adjustment (No need to adjust normally)			50-20
ADJ 6	Scan image distortion adjustment (Document table mode)	6A	Scanner (reading) unit parallelism adjustment			
		6B	Scan image (sub scanning direction) distortion adjustment			
		6C	Scan image (main scanning direction) distortion adjustment			
ADJ 7	Scanner image skew adjustment (RSPF mode)					64-2
ADJ 8	Scan image focus adjustment					48-1
ADJ 9	Print lead edge image position adjustment (Printer mode)					50-5
ADJ 10/ SET1	Color balance and density adjustment		Note before execution of the image quality adjustment			
			Copy image quality check			
			Printer image quality check			
		10A	Scanner calibration (CCD calibration)			63-3 (63-5)
		SET 1	Color balance adjustment target setup	1A	Copy color balance adjustment target setup	63-7/8/11
				1B	Printer color balance adjustment target setup	67-26/27/28
		10B	Copy/Printer color balance and density adjustment (Automatic adjustment) (Basic adjustment)			46-74
		10C	Copy image quality adjustment (Basic adjustment)	10C (1)	Copy color balance and density adjustment (Automatic adjustment)	46-24
				10C (2)	Copy color balance and density adjustment (Manual adjustment)	46-21
		10D	Copy / Image send / FAX image quality adjustment (Individual adjustment)	10D (1)	Color copy density adjustment (for each color copy mode) (separately for the low-density area and the high-density area) (No need to adjust normally)	46-1
				10D (2)	Monochrome copy density adjustment (for each monochrome copy mode) (separately for the low-density area and the high-density area) (No need to adjust normally)	46-2
				10D (3)	Color copy color balance, gamma adjustment (for each color copy mode) (No need to adjust normally)	46-10
				10D (4)	Monochrome copy density, gamma adjustment (for each monochrome copy mode) (No need to adjust normally)	46-16
				10D (5)	Automatic monochrome (Copy/Scan/FAX) mode document density scanning operation (exposure operation) conditions setting (Normally no need to set)	46-19

Job No.	Adjustment item list					Simulation
ADJ 10/ SET1	Color balance and density adjustment	10D	Copy / Image send / FAX image quality adjustment (Individual adjustment)	10D (6)	Document low density image density reproduction adjustment in the automatic monochrome (Copy/ Scan/FAX) mode (No need to adjust normally) (Background density adjustment in the scanning section)	46-32
				10D (7)	Copy/Scan low density image density adjustment (for each mode) (No need to adjust normally)	46-63
				10D (8)	Color copy, text, line image reproduction adjustment (edge gamma, density adjustment) (Text, Map mode) (No need to adjust normally)	46-27
				10D (9)	Monochrome (Copy/Scan/FAX) mode color document reproduction adjustment (No need to adjust normally)	46-37
				10D (10)	Color copy mode dark area gradation (black component quantity) adjustment (No need to adjust normally)	46-38
				10D (11)	Color (Copy/Scan) mode sharpness adjustment (No need to adjust normally)	46-60
				10D (12)	Copy high density image density reproduction setting (Normally unnecessary to the setting change)	46-23
				10D (13)	Copy color balance adjustment (Single color copy mode) (No need to adjust normally)	46-25
				10D (14)	RSPF mode (Copy/Scan/FAX) density adjustment (No need to adjust normally)	46-9
				10D (15)	Automatic color balance adjustment by the user (Copy color balance automatic adjustment ENABLE setting and adjustment)	26-53
				10D (16)	Copy gamma, color balance adjustment for each dither (Automatic adjustment)	46-54
				10D (17)	Dropout color adjustment (Normally not required.) (26cpm/36cpm/31cpm(A) machine)	46-55
				10D (18)	Watermark adjustment (Normally not required) (26cpm/36cpm/31cpm(A) machine)	46-66
		10E	Printer image quality adjustment (Basic adjustment)	10E (1)	Printer color balance adjustment (Automatic adjustment)	67-24
				10E (2)	Printer color balance adjustment (Manual adjustment)	67-25
		10F	Printer image quality adjustment (Individual adjustment)	10F (1)	Printer density adjustment (Low density section density adjustment) (No need to adjust normally)	67-36
				10F (2)	Printer high density image density reproduction setting (Supporting the high density section tone gap) (No need to adjust normally)	67-34
				10F (3)	Printer gamma adjustment for each dither (Automatic adjustment) (No need to adjust normally) (Except for GDI printers)	67-54
				10F (4)	Automatic color balance adjustment by the user (Printer color balance automatic adjustment ENABLE setting and adjustment) (Normally unnecessary to the setting change)	26-53
ADJ 11	Paper size sensor adjustment	11A	Manual paper feed tray paper size (width) sensor adjustment			40-2
		11B	RSPF paper feed tray document size (width) sensor adjustment			53-6
ADJ 12	Document size detection adjustment	12A	Document size sensor detection point adjustment			41-1
		12B	Adjust the sensitivity of the original size sensor			41-2
ADJ 13	Touch panel coordinate setting					65-1
ADJ 14	Fusing paper guide position adjustment					
ADJ 15	Print image position, image magnification ratio, void area, off-center adjustment (Print engine) (Manual adjustment)	15A	Print image magnification ratio adjustment (main scanning direction) (Print engine) (Manual adjustment)			50-10
		15B	Print image print area adjustment (Print engine) (Manual adjustment)			50-10/50/1
		15C	Print image off-center adjustment (Print engine) (Manual adjustment)			50-10
ADJ 16	Scan image magnification ratio adjustment (Manual adjustment)	16A	Scan image magnification ratio adjustment (main scanning direction) (Manual adjustment) (Document table mode)			48-1
		16B	Scan image magnification ratio adjustment (sub scanning direction) (Manual adjustment) (Document table mode)			48-1/48-5
		16C	Scan image magnification ratio adjustment (main scanning direction) (Manual adjustment) (RSPF mode)			48-1
		16D	Scan image magnification ratio adjustment (sub scanning direction) (Manual adjustment) (RSPF mode)			48-1
ADJ 17	Scan image off-center adjustment (Manual adjustment)	17A	Scan image off-center adjustment (Manual adjustment) (Document table mode)			50-12
		17B	Scan image off-center adjustment (Manual adjustment) (RSPF mode)			50-12/50-6
ADJ 18	Copy image position, image loss adjustment (Manual adjustment)	18A	Copy image position, image loss, void area adjustment (Manual adjustment) (Document table mode)			50-1
		18B	Image scanning position adjustment (Manual adjustment) (RSPF mode)			53-8
		18C	Copy image position, image loss, void area adjustment (Manual adjustment) (RSPF mode)			50-6
ADJ 19	Finisher and punch unit adjustments (alignment, punch hole position, staple position)					3-10

3. Details of adjustment

ADJ 1 Adjust the developing unit

1-A Adjust the developing doctor gap

This adjustment must be performed in the following cases:

* The developing unit has been disassembled.
* When the print image density is low.
* When there is a blur on the print image.
* When there is unevenness in the print image density.
* The toner is excessively dispersed.

Important

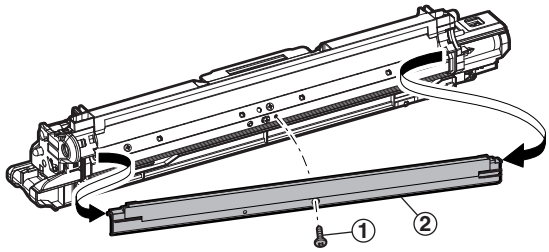
Be careful not to attach a fingerprint, oil, grease, or a foreign material on the DV roller during the procedure. Also be careful not to scratch the DV roller surface.

If a fingerprint, oil, grease, or a foreign material is erroneously attached to the DV roller during the procedure, remove all developer from the developing unit and clean the roller with alcohol.

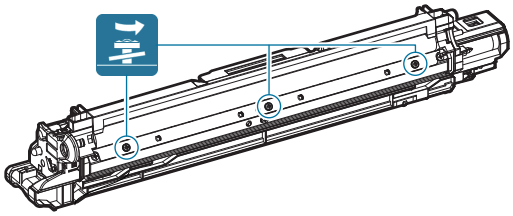
Important

Do not exert force when holding the DV Unit.

1) Remove the developing unit from the main unit, and remove the developing doctor cover.



2) Loosen the developing doctor fixing screw.

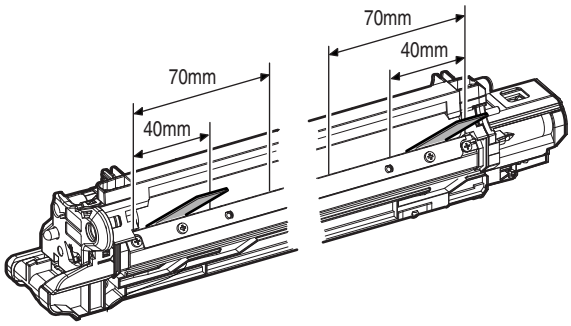


3) Insert a thickness gauge of 0.65mm in between 40mm - 70mm from the edge of the developing doctor.

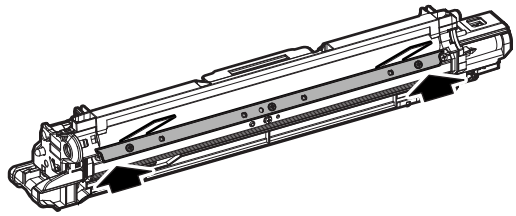
Important

Note for use of a thickness gauge

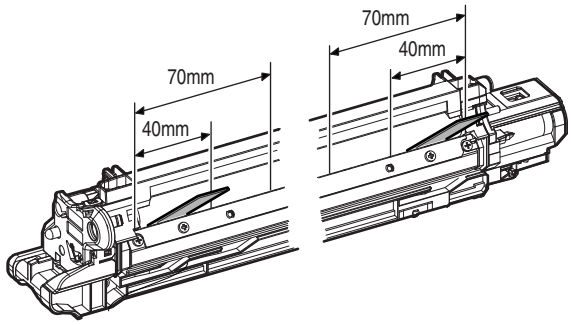
- Do not insert the gauge diagonally.
- The gauge must pass freely.
- The advisable point of measurement is the MIN point of the DV roller oscillation.



4) Push the developing doctor in the arrow direction, and tighten the fixing screw of the developing doctor. (Perform the similar procedure for the front frame and the rear frame.)



5) Check that the doctor gaps at two positions in 40mm - 70mm from the both sides of the developing doctor are in the range of 0.65 ± 0.05mm.



1-B Adjust the developing roller main pole position

This adjustment must be performed in the following cases:

* The developing unit has been disassembled.
* When the print image density is low.
* When there is a blur on the print image.
* When there is unevenness in the print image density.
* The toner is excessively dispersed.

Important

Be careful not to leave a fingerprint, oil, grease, or a foreign material on the DV roller during the procedure. Also be careful not to scratch the DV roller surface.

If a fingerprint, oil, grease, or a foreign material is erroneously attached to the DV roller during the procedure, remove all developer from the developing unit and clean the roller with alcohol.

Important

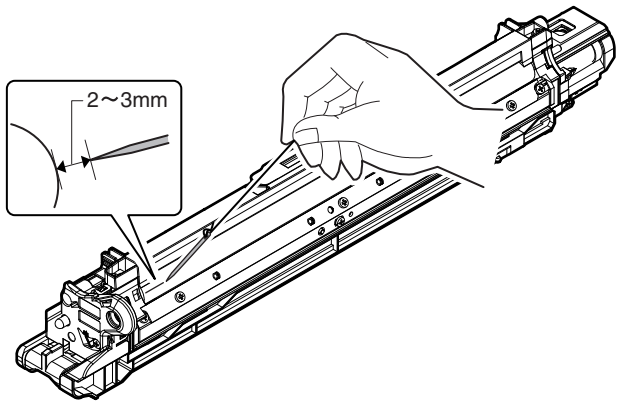
Do not exert force when holding the DV Unit.

1) Remove the developing doctor cover, and place the developing unit on a flat surface.
2) Attach a piece of string to a sewing needle or pin.
3) Hold the thread and bring the needle near the developing roller. (Do not use a paper clip because too heavy. It will not provide a correct position.)

4) Mark the developing roller surface on the extension line of the needle with the needle at 2 - 3mm from the developing roller edge. (Never touch the needle tip to the developing roller.)

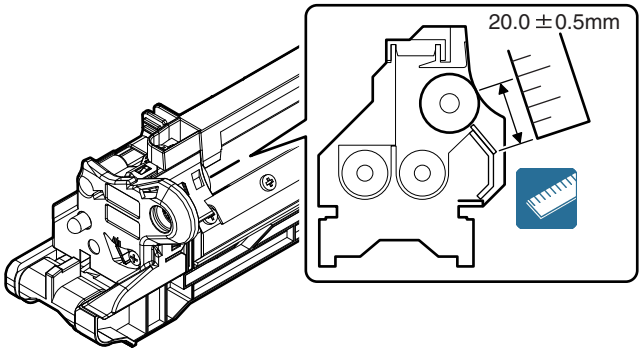
Important

Marking must be made at the edge section (non-image area) of the DV roller.

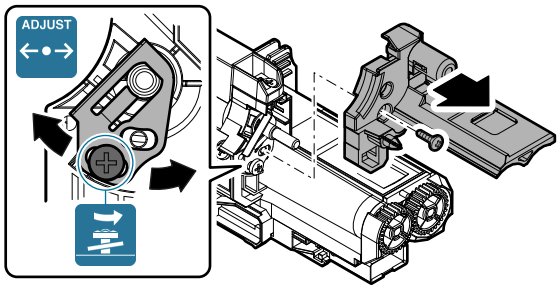


5) Measure the distance between the marking position and the DV doctor edge A position, and confirm that the distance is 20.0 ± 0.5mm.

If the distance is not within the above range, adjust the DV roller main pole position in the following procedures.



6) Remove the developing unit rear cover, loosen the fixing screw of the DV roller main pole adjustment plate, and move the adjustment plate in the arrow direction to adjust.



Repeat procedures 3) - 6) until the DV roller main pole position comes to the specified range.

7) After completion of the adjustment of the DV roller main pole position, fix the DV roller main pole adjustment plate with the fixing screw.

1-C Toner density control reference value setting

This adjustment must be performed in the following cases:

* When developer is replaced.

Important

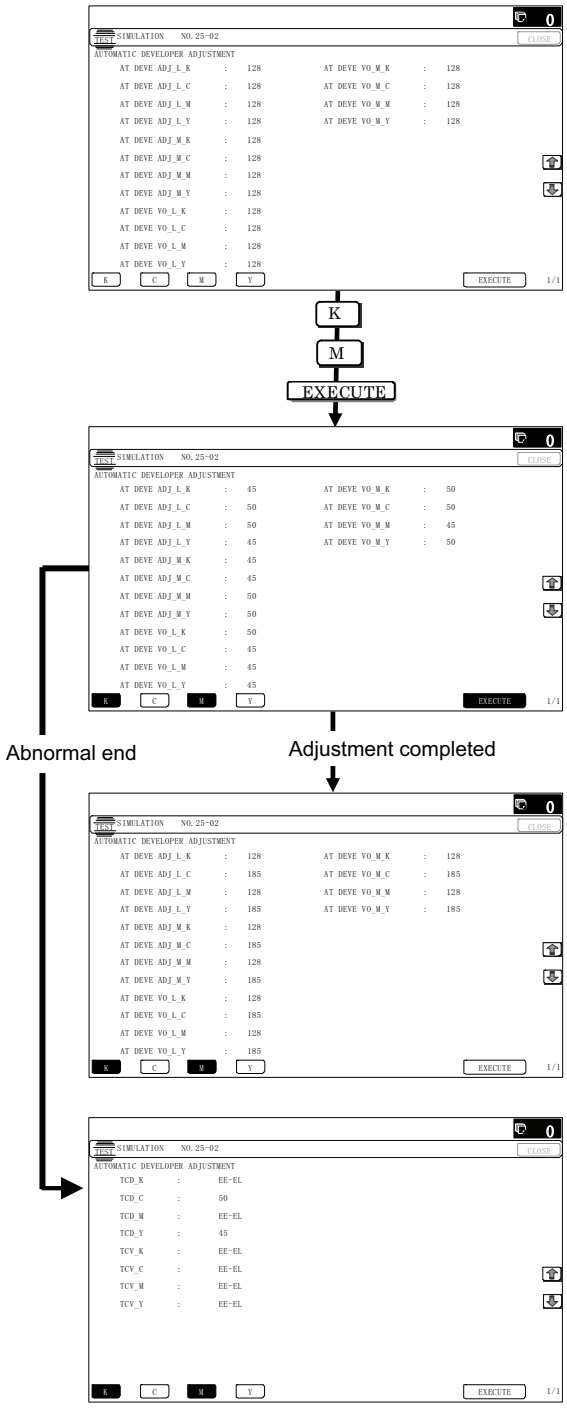
Be sure to execute this adjustment only when developer is replaced. Never execute it in the other cases.

Important

Perform the toner density reference control level adjustment with the toner cartridges removed.

If adjustment is performed with toner cartridges installed, the EE-EL trouble code or an over-toned condition may occur.

1) With the front cabinet open, enter SIM25-2.



2) Close the front cabinet.
3) Select a developing unit to be adjusted.
4) When [EXECUTE] key is pressed, it is highlighted. The DV roller rotates, and the toner density sensor detects toner density, and the output value is displayed.

   The above operation is executed for 1.5 minutes, and the average value of the toner density sensor detection level is set (saved) as the reference toner density control value.

   When the reference toner density control adjustment operation is completed, [EXECUTE] key returns to normal from highlight. This makes known about whether the adjustment operation is completed or not.

   The above operation is executed each of the lower speed mode and the middle speed mode, and the reference toner density control value is set for each of them.

Important

If the operation is interrupted within 1.5 minutes, the adjustment result is not reflected.

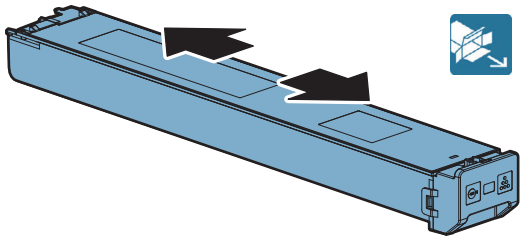
When [EXECUTE] key is pressed during the operation, the operation is stopped and [EXECUTE] key returns to the normal display.

If [EE-EU], [EE-EL], or [EE-EC] is displayed, setting of the reference toner density control value is not completed normally.

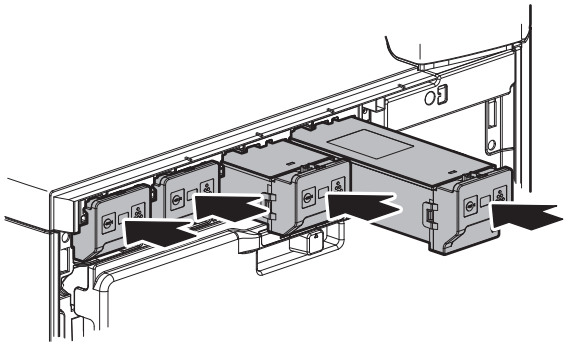
Troubleshoot the cause, remove the cause, and perform setting again.

Error display	Error name	Detail of error
EE-EL	EL abnormality	Sensor output level less than 1.0V, or control voltage over 8.0V.
EE-EU	EU abnormality	Sensor output level over 2.3V, or control voltage less than 2.0V.
EE-EC	EC abnormality	Sensor output level: other than 1.65 ± 0.13V

5) Cancel SIM 25-2.
6) Confirm that "Install the toner cartridge" is displayed, and install the toner cartridge by the following procedures.
7) Shake the toner cartridge horizontally several times.



8) Open the front cabinet, and insert each toner cartridge.



Important

Be sure to install the color cartridges to their proper positions. Avoid installation to a different color position.

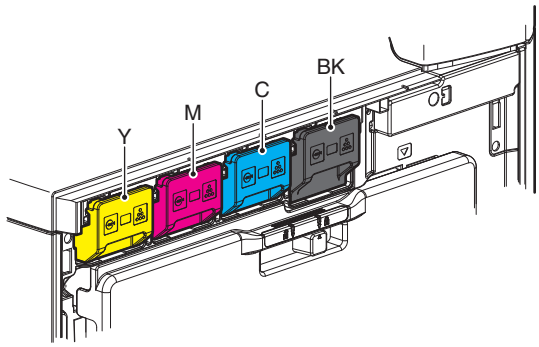
Important

Do not forcibly insert the toner cartridge.
Push it in until the cartridge is securely locked in place.

Important

Developing units removed, be sure to remove the toner cartridges as well to prevent toner clogging.

Color toner cartridge positions



9) Close the front cabinet.
10) Confirm that "Toner replenishment in progress" is displayed, and wait until the display disappears. (It takes 30 sec - 6 min.)

Note

This procedure is for checking the toner supply operation from the toner cartridge to the DV unit. The operation time differs depending on the toner quantity in the toner cartridge, uneven distribution of toner, and the internal state of the toner cartridge.

Important

Do not perform operations which interrupt the above operation, such as opening the front cover, entering the SIM mode, and turning OFF/ON the power. If this precaution is ignored, Trouble codes F2-40 - 43 or F2-64 - 67 or a over-toned condition may occur.

Important

When replacing developer, always replace all the three colors of Yellow, Magenta, and Cyan.

If only one color is replaced, color balance may be adversely affected. Black developer can be replaced individually.

Important

When developer is replaced, be sure to perform the color balance adjustment.

Important

When not replacing the developer, do not execute SIM25-2.

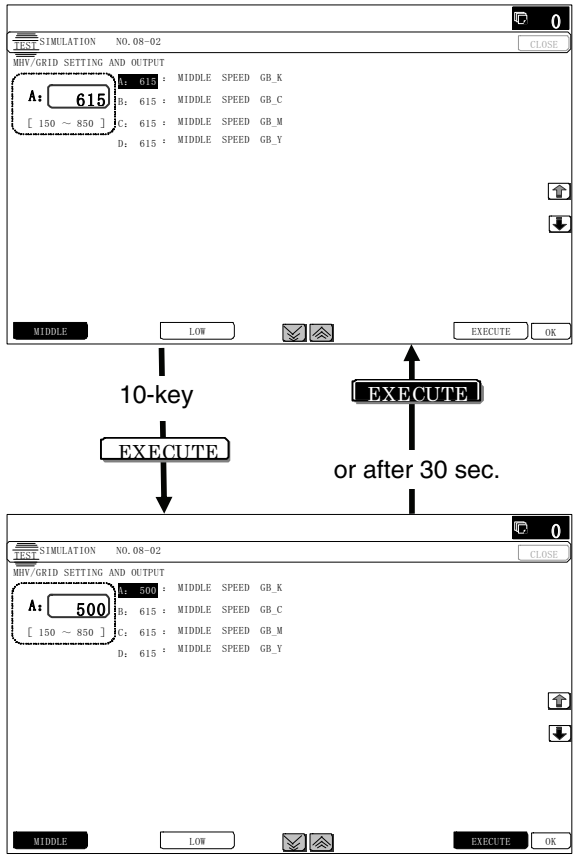
ADJ 2 Adjusting high voltage values

2-A Adjust the main charger grid voltage

This adjustment must be performed in the following cases:

* When the MC/DV high voltage power PWB is replaced.
* U2 trouble has occurred.
* The PCU PWB has been replaced.
* The EEPROM of the PCU PWB has been replaced.

1) Enter the SIM 8-2 mode.

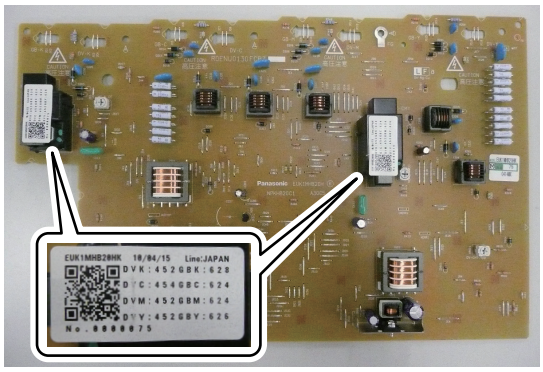


2) Select an output mode and an item to be adjusted.

Item/Display (Mode)			Content		Adjustment range	Actual voltage		
						18cpm/ 20cpm/ 23cpm machine	26cpm/ 31cpm machine	36cpm machine
MIDDLE	A	MIDDLE SPEED GB_K	Main charger grid voltage (Middle speed mode)	K	150 - 850	–615V±5V	–620V±5V	–625V±5V
	B	MIDDLE SPEED GB_C	Main charger grid voltage (Middle speed mode)	C	150 - 850	–615V±5V	–620V±5V	–625V±5V
	C	MIDDLE SPEED GB_M	Main charger grid voltage (Middle speed mode)	M	150 - 850	–615V±5V	–620V±5V	–625V±5V
	D	MIDDLE SPEED GB_Y	Main charger grid voltage (Middle speed mode)	Y	150 - 850	–615V±5V	–620V±5V	–625V±5V
LOW	A	LOW SPEED GB_K	Main charger grid voltage (Low speed mode)	K	150 - 850	–610V±5V	–610V±5V	–610V±5V
	B	LOW SPEED GB_C	Main charger grid voltage (Low speed mode)	C	150 - 850	–590V±5V	–590V±5V	–590V±5V
	C	LOW SPEED GB_M	Main charger grid voltage (Low speed mode)	M	150 - 850	–590V±5V	–590V±5V	–590V±5V
	D	LOW SPEED GB_Y	Main charger grid voltage (Low speed mode)	Y	150 - 850	–590V±5V	–590V±5V	–590V±5V

3) Enter the adjustment value (specified value) in the middle speed mode, and press [OK] key.

Enter the adjustment value of each mode which is specified on the label attached on the MC/DV high voltage power PWB.



When [EXECUTE] key is pressed, the voltage entered in the procedure 3) is outputted for 30sec and the set value is saved.

When [EXECUTE] key is pressed again, the output is stopped.

Important

Note that the adjustment value may differ depending on the MC/DV high voltage power PWB.

Since the adjustment value label is attached on the MC/DV high voltage PWB, the PWB must be removed in order to check the adjustment value.

This is a troublesome procedure. Therefore, it is advisable to put down the adjustment value in advance.

When the adjustment value (specified value) of the middle speed mode is set, the adjustment values of the other modes are automatically set according to the middle speed mode setting in a certain relationship.

Important

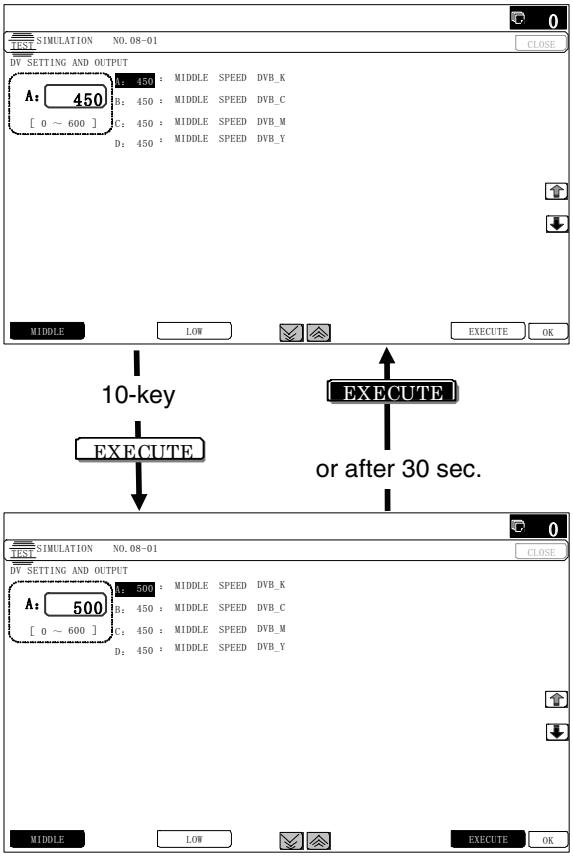
Since the high voltage output cannot be checked with a digital multi meter in this model, a judgment of the output must be made by checking the print image quality.

2-B Adjust the developing bias voltage

This adjustment must be performed in the following cases:

* When the MC/DV high voltage power PWB is replaced.
* U2 trouble has occurred.
* The PCU PWB has been replaced.
* The EEPROM of the PCU PWB has been replaced.

1) Enter the SIM 8-1 mode.

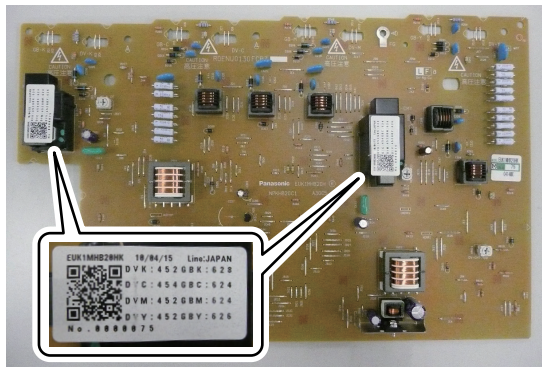


2) Select an output mode and an item to be adjusted.

Item/Display (Mode)			Content		Adjustment range	Actual voltage
MIDDLE	A	MIDDLE SPEED DVB_K	Developing bias voltage (Middle speed mode)	K	0 - 600	–450V ±5V
	B	MIDDLE SPEED DVB_C	Developing bias voltage (Middle speed mode)	C	0 - 600	–450V ±5V
	C	MIDDLE SPEED DVB_M	Developing bias voltage (Middle speed mode)	M	0 - 600	–450V ±5V
	D	MIDDLE SPEED DVB_Y	Developing bias voltage (Middle speed mode)	Y	0 - 600	–450V ±5V
LOW	A	LOW SPEED DVB_K	Developing bias voltage (Low speed mode)	K	0 - 600	–450V ±5V
	B	LOW SPEED DVB_C	Developing bias voltage (Low speed mode)	C	0 - 600	–430V ±5V
	C	LOW SPEED DVB_M	Developing bias voltage (Low speed mode)	M	0 - 600	–430V ±5V
	D	LOW SPEED DVB_Y	Developing bias voltage (Low speed mode)	Y	0 - 600	–430V ±5V

3) Enter the adjustment value (specified value) in the middle speed mode, and press [OK] key.

Enter the adjustment value of each mode which is specified on the label attached on the MC/DV high voltage power PWB.



When [EXECUTE] key is pressed, the voltage entered in the procedure 3) is outputted for 30sec and the set value is saved.

When [EXECUTE] key is pressed again, the output is stopped.

Important

Note that the adjustment value may differ depending on the MC/DV high voltage power PWB.

Since the adjustment value label is attached on the MC/DV high voltage PWB, the PWB must be removed in order to check the adjustment value.

This is a troublesome procedure. Therefore, it is advisable to put down the adjustment value in advance.

When the adjustment value (specified value) of the middle speed mode is set, the adjustment values of the other modes are automatically set according to the middle speed mode setting in a certain relationship.

Important

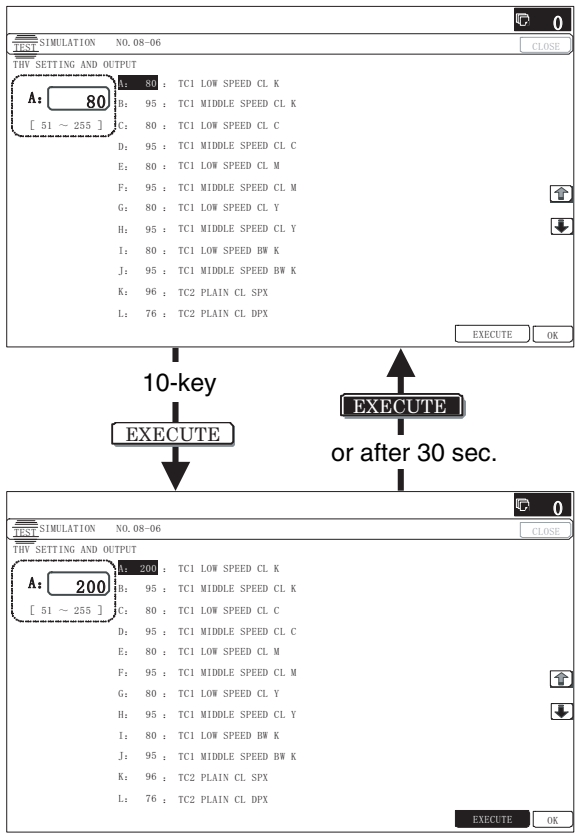
Since the high voltage output cannot be checked with a digital multi meter in this model, a judgment of the output must be made by checking the print image quality.

2-C Transfer current and voltage adjustment

This adjustment must be performed in the following cases:

* When the TC high voltage PWB is replaced.
* U2 trouble has occurred.
* The PCU PWB has been replaced.
* The EEPROM of the PCU PWB has been replaced.

1) Enter the SIM 8-6 mode.


SIMULATION NO.08-06
CLOSE
THV SETTING AND OUTPUT
A: 80
[51 ~ 255]
A: 80 : TC1 LOW SPEED CL K
B: 95 : TC1 MIDDLE SPEED CL K
C: 80 : TC1 LOW SPEED CL C
D: 95 : TC1 MIDDLE SPEED CL C
E: 80 : TC1 LOW SPEED CL M
F: 95 : TC1 MIDDLE SPEED CL M
G: 80 : TC1 LOW SPEED CL Y
H: 95 : TC1 MIDDLE SPEED CL Y
I: 80 : TC1 LOW SPEED BW K
J: 95 : TC1 MIDDLE SPEED BW K
K: 96 : TC2 PLAIN CL SPX
L: 76 : TC2 PLAIN CL DPX
EXECUTE
OK
10-key
EXECUTE
EXECUTE
or after 30 sec.
SIMULATION NO.08-06
CLOSE
THV SETTING AND OUTPUT
A: 200
[51 ~ 255]
A: 200 : TC1 LOW SPEED CL K
B: 95 : TC1 MIDDLE SPEED CL K
C: 80 : TC1 LOW SPEED CL C
D: 95 : TC1 MIDDLE SPEED CL C
E: 80 : TC1 LOW SPEED CL M
F: 95 : TC1 MIDDLE SPEED CL M
G: 80 : TC1 LOW SPEED CL Y
H: 95 : TC1 MIDDLE SPEED CL Y
I: 80 : TC1 LOW SPEED BW K
J: 95 : TC1 MIDDLE SPEED BW K
K: 96 : TC2 PLAIN CL SPX
L: 76 : TC2 PLAIN CL DPX
EXECUTE
OK

2) Select an item to be adjusted.

Item/Display		Content				Setting range	18cpm/20cpm/ 23cpm machine		26cpm/31cpm machine		36cpm machine	
							Default value	Actual output value	Default value	Actual output value	Default value	Actual output value
A	TC1 LOW SPEED CL K	Primary transfer bias adjustment value	Color	K	Low speed	51 - 255	80	6μA	80	6μA	80	6μA
B	TC1 MIDDLE SPEED CL K				Middle speed	51 - 255	95	8μA	109	10μA	117	11μA
C	TC1 LOW SPEED CL C			C	Low speed	51 - 255	80	6μA	80	6μA	80	6μA
D	TC1 MIDDLE SPEED CL C				Middle speed	51 - 255	95	8μA	109	10μA	117	11μA
E	TC1 LOW SPEED CL M			M	Low speed	51 - 255	80	6μA	80	6μA	80	6μA
F	TC1 MIDDLE SPEED CL M				Middle speed	51 - 255	95	8μA	109	10μA	117	11μA
G	TC1 LOW SPEED CL Y			Y	Low speed	51 - 255	80	6μA	80	6μA	80	6μA
H	TC1 MIDDLE SPEED CL Y				Middle speed	51 - 255	95	8μA	109	10μA	117	11μA
I	TC1 LOW SPEED BW K		Black/White	K	Low speed	51 - 255	80	6μA	80	6μA	80	6μA
J	TC1 MIDDLE SPEED BW K				Middle speed	51 - 255	95	8μA	109	10μA	117	11μA

Item/Display		Content				Setting range	18cpm/20cpm/ 23cpm machine		26cpm/31cpm machine		36cpm machine	
							Default value	Actual output value	Default value	Actual output value	Default value	Actual output value
K	TC2 PLAIN CL SPX	Secondary transfer bias adjustment value	Color	Standard paper	Front surface	51 - 255	96	–35μA	103	–40μA	110	–45μA
L	TC2 PLAIN CL DPX				Back surface	51 - 255	76	–20μA	90	–30μA	96	–35μA
M	TC2 PLAIN BW SPX		Black/White		Front surface	51 - 255	96	–35μA	103	–40μA	110	–45μA
N	TC2 PLAIN BW DPX				Back surface	51 - 255	76	–20μA	90	–30μA	96	–35μA
O	TC2 HEAVY1 CL SPX		Color	Heavy paper 1	Front surface	51 - 255	83	–25μA	83	–25μA	83	–25μA
P	TC2 HEAVY1 CL DPX				Back surface	51 - 255	76	–20μA	76	–20μA	76	–20μA
Q	TC2 HEAVY1 BW SPX		Black/White		Front surface	51 - 255	69	–15μA	69	–15μA	69	–15μA
R	TC2 HEAVY1 BW DPX				Back surface	51 - 255	69	–15μA	69	–15μA	69	–15μA
S	TC2 HEAVY2 CL		Color	Heavy paper 2		51 - 255	83	–25μA	83	–25μA	83	–25μA
T	TC2 HEAVY2 BW		Black/White			51 - 255	69	–15μA	69	–15μA	69	–15μA
U	TC2 OHP CL		Color	OHP		51 - 255	69	–15μA	69	–15μA	69	–15μA
V	TC2 OHP BW		Black/White			51 - 255	69	–15μA	69	–15μA	69	–15μA
W	TC2 ENVELOPE CL		Color	Envelope		51 - 255	69	–15μA	69	–15μA	69	–15μA
X	TC2 ENVELOPE BW		Black/White			51 - 255	69	–15μA	69	–15μA	69	–15μA
Y	TC2 THIN CL		Color	Thin paper		51 - 255	96	–35μA	103	–40μA	110	–45μA
Z	TC2 THIN BW		Black/White			51 - 255	96	–35μA	103	–40μA	110	–45μA
AA	TC2 GLOSSY CL		Color	Gloss paper		51 - 255	83	–25μA	83	–25μA	83	–25μA
AB	TC2 GLOSSY BW		Black/White			51 - 255	69	–15μA	69	–15μA	69	–15μA
AC	TC2 CLEANING	Secondary transfer cleaning bias adjustment value	Cleaning process (negative pole)			51 - 255	59	–8μA	59	–8μA	59	–8μA
AD	TC2 CLEAN LOW SPD		Low speed print mode			0 - 255	26	0V	26	0V	26	0V
AE	TC2 CLEAN MIDDLE SPD		Middle speed print mode			0 - 255	26	0V	26	0V	26	0V
AF	TC2 CLEAN CLEANING		Cleaning bias (positive pole)			0 - 255	102	500V	102	500V	102	500V
AG	PTC LOW SPEED CL	PTC current adjustment value	Color	Low speed		51 - 255	73	–200μA	73	–200μA	73	–200μA
AH	PTC MIDDLE SPEED CL			Middle speed		51 - 255	73	–200μA	73	–200μA	73	–200μA
AI	PTC LOW SPEED BW		Black/White	Low speed		51 - 255	73	–200μA	73	–200μA	73	–200μA
AJ	PTC MIDDLE SPEED BW			Middle speed		51 - 255	73	–200μA	73	–200μA	73	–200μA
AK	CASE VOLT LOW CL	PTC voltage adjustment value	Color	Low speed		0 - 255	0	0V	0	0V	0	0V
AL	CASE VOLT MID CL			Middle speed		0 - 255	0	0V	0	0V	0	0V
AM	CASE VOLT LOW BW		Black/White	Low speed		0 - 255	0	0V	0	0V	0	0V
AN	CASE VOLT MID BW			Middle speed		0 - 255	0	0V	0	0V	0	0V

3) Enter the adjustment value (specified value), and press [OK] key.

When [EXECUTE] key is pressed, the voltage entered in the procedure 3) is outputted for 30sec and the set value is saved.

When [EXECUTE] key is pressed again, the output is stopped.

By setting the default value (specified value), the specified output is provided.

ADJ 3 Image density sensor adjustment

Before executing this adjustment, check to confirm the following items.

* Check to confirm that the color image density sensor (image registration sensor F) and the black image density sensor (image registration sensor R) are clean.
* Check to confirm that the image density sensor calibration plate is clean.
* Check to confirm that the transfer belt is clean and free from scratches.

3-A Image density sensor calibration

There are some parts variations in the image density sensor section. Therefore, the absolute image density detection level differs in each machine. To correct this, calibration is executed.

This adjustment must be performed in the following cases:

* When the color image density sensor (image registration sensor F) is replaced.
* When the image registration sensor unit is replace.
* U2 trouble has occurred.
* The PCU PWB has been replaced.
* The EEPROM of the PCU PWB has been replaced.
* The image density sensor and the standard reflection plate are cleaned.

Perform the color image density sensor (image registration sensor F) calibration in one of the following methods.

Method 1

Color image density sensor (Image registration sensor F) calibration (SIM44-61)

When the image density sensor unit is replaced, perform the adjustment by this procedure.

When the registration sensor unit is replaced, the calibration value is set manually with this method. The calibration jig is not required.

Method 2

Color image density sensor (Image registration sensor F) calibration (SIM44-13)

When the color image density sensor (image registration sensor F) is solely replaced, be sure to perform the adjustment by this procedure.

A calibration jig is required for this procedure.

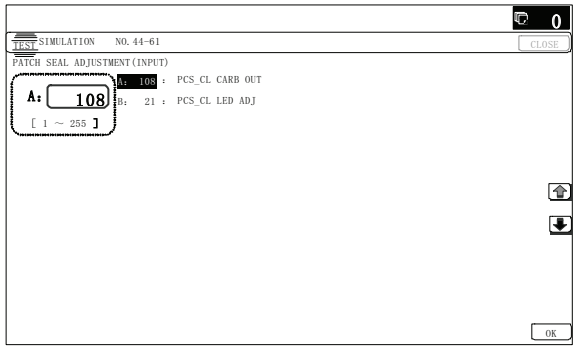
The adjustment by this method must be performed in the following cases:

- The SIM44-2 PCS_CL LED ADJ value is increased by aging and dirt of the image density sensor and the standard reflection plate.
- When the density of an output image is decreased and the difference between the SIM44-2 PCS_CL LED ADJ value and the SIM44-13 PCS_CL LED ADJ value is 30 or more, the image density sensor, the registration sensor, and the standard reflection plate may be dirtied.

  In this case, clean the image density sensor, the registration sensor, and the standard reflection plate with dry cloth, and perform calibration with SIM44-13 by using the calibration tool (UKOG-0318FCZZ).

a. Procedure by calibration (SIM44-61) of the color image density sensor (image registration sensor F)

1) Enter the SIM44-61 mode.

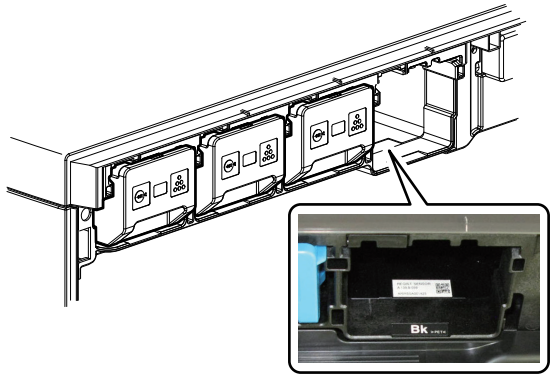


2) Select an adjustment item.

Item/Display		Content	Setting range	Default value
A	PCS_CL CARB OUT	Calibration plate sensor value	1 - 255	108
B	PCS_CL LED ADJ	Color sensor light emitting quantity adjustment value	1 - 255	21

3) Enter the adjustment value with 10 key.

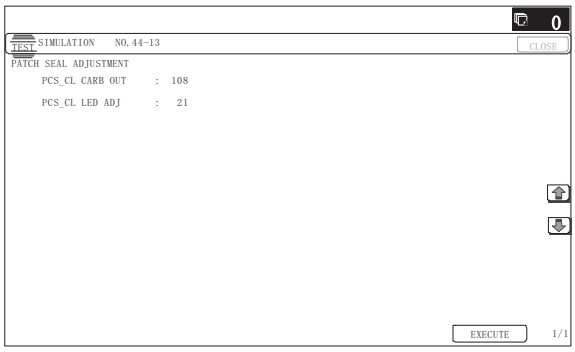
   As the adjustment value, enter the value on the label attached to the slot section of the toner cartridge (BK) of the sensor unit.



4) Press [OK] key.

b. Color image density sensor (Image registration sensor F) calibration (Method by SIM44-13)

1) Enter the SIM44-13 mode.



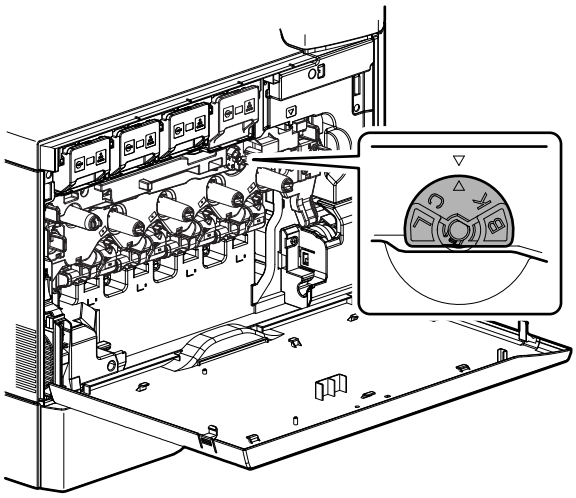
2) Open the front cover, and remove the waste toner box. Check to confirm that the belt tension of the primary transfer unit is released (the separation lever of the primary transfer unit is as shown in the figure).

If the belt tension is not released, turn the separation lever to the state shown in the figure.

Important

When the transfer belt tension of the primary transfer unit is released manually, turn on the power again after completion of the work.

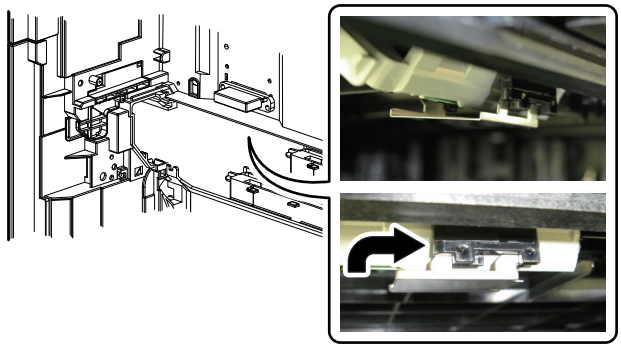
This procedure initializes the transfer roller to return it to the home position.



3) Open the right paper transport unit, and remove the BK developing unit, the BK OPC drum unit, and the primary transfer unit.

4) Install the color image density sensor (image registration sensor F) calibration jig (UKOG-0318FCZZ) to the sensor housing section.

Engage the calibration jig with the projection of the sensor housing, and slide it to the rear frame side.



5) Close the right paper transport unit, and manually turn ON the front door switch.

6) Press [EXECUTE] key.

Color image density sensor (image registration sensor F) calibration is automatically executed. When the operation is completed, the adjustment result is displayed and [EXECUTE] key returns to the normal display.

Display/Item		Content	Adjustment value range	Default
A	PCS_CL CARB OUT	Color image density sensor LED current adjustment target value	1 - 255	108
B	PCS_CL LED ADJ	Color image density sensor LED current adjustment target value (PCS CL CARB OUT) registered LED current level	1 - 255	21

If the adjustment is not completed normally, "ERROR" is displayed.

When an error occurs, the adjustment result is not revised.

In that case, check the following sections for any abnormality. If any abnormality is found, repair and execute calibration again.

* Color image density sensor (image registration sensor F)
* PCU PWB
* Image sensor calibration jig (dirt, scratch, discoloration)
* Image density sensor standard reflection plate (dirt, scratch, discoloration)

The message is displayed, indicating that the jig is removed and the primary transfer unit is installed.

7) Remove the jig and install the BK developing unit, the BK OPC drum unit, and the primary transfer unit, and close the right paper transport unit.

8) [EXECUTE] key is pressed again.

Important

The image sensor calibration jig must be stored at lower temperatures and low humidity without external lights.

Important

When this adjustment is executed, perform the ADJ10B copy/printer color balance adjustment with SIM46-74.

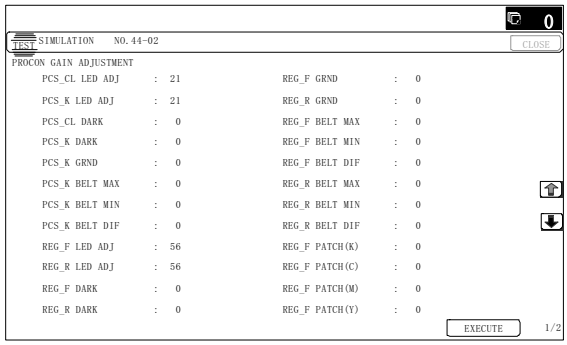
3-B Image density sensor adjustment

The image density sensor standard reflection plate and the transfer belt surface are used to make the sensitivity adjustment of the color image density sensor (image registration sensor F) and the black image density sensor (image registration sensor R).

This adjustment executes automatically at the outset of registration adjustment operation and process control operation as well as SIM44-2.

Normally, therefore, it is not required to perform this adjustment. It is performed only when the sensor is replaced or when the adjustment result is checked.

1) Enter SIM44-2 mode.


TEST SIMULATION NO.44-02
CLOSE
PROCON GAIN ADJUSTMENT
PCS_CL LED ADJ : 21
PCS_K LED ADJ : 21
PCS_CL DARK : 0
PCS_K DARK : 0
PCS_K GRND : 0
PCS_K BELT MAX : 0
PCS_K BELT MIN : 0
PCS_K BELT DIF : 0
REG_F LED ADJ : 56
REG_R LED ADJ : 56
REG_F DARK : 0
REG_R DARK : 0
REG_F GRND : 0
REG_R GRND : 0
REG_F BELT MAX : 0
REG_F BELT MIN : 0
REG_F BELT DIF : 0
REG_R BELT MAX : 0
REG_R BELT MIN : 0
REG_R BELT DIF : 0
REG_F PATCH(K) : 0
REG_F PATCH(C) : 0
REG_F PATCH(M) : 0
REG_F PATCH(Y) : 0
EXECUTE
1/2

2) Press [EXECUTE] key.

The sensitivity adjustments of the color image density sensor (image registration sensor F) and the black image density sensor (image registration sensor R) are automatically performed.

After completion of the adjustment, the adjustment result is displayed and [EXECUTE] key returns to the normal display.

If the adjustment is not completed normally, "ERROR" is displayed.

Mode	Error display	Error content	
Adjustment value for process control operation mode	BK_SEN_ ADJ_ERR	Black image density sensor adjustment abnormality	PCS_K LED ADJ error (The target value is not obtained after retried three times.)
	CL_SEN_ ADJ_ERR	Color image density sensor adjustment abnormality	PCS_CL LED ADJ error (The target value is not obtained after retried three times.)
	BELT_READ_ ERR	Transfer belt surface reading abnormality	PCS_K GRND error (The surface detection level is maximum or the minimum value difference is outside a reference range.)
Adjustment value for image registration operation mode	REG_SEN_ F_ADJ_ERR	Registration sensor F adjustment abnormality	REG_F LED ADJ error (The target value is not obtained after retried three times.)
	REG_SEN_ R_ADJ_ERR	Registration sensor R adjustment abnormality	REG_R LED ADJ error (The target value is not obtained after retried three times.)
	REG_BELT_ F_READ_ ERR	F side transfer belt surface reading abnormality	REG_F GRND error (The surface detection level is maximum or the minimum value difference is outside a reference range.)
	REG_BELT_ R_READ_ ERR	R side transfer belt surface reading abnormality	REG_R GRND error (The surface detection level is maximum or the minimum value difference is outside a reference range.)

When an error occurs, check the following sections for any abnormality.

- Color image density sensor (image registration sensor F)
- Black image density sensor (image registration sensor R)
- PCU PWB
- Transfer belt (dirt, scratch)
- Transfer belt cleaner
- Image density sensor standard reflection plate (dirt, scratch, discoloration)

If any abnormality is found, repair and adjust again.

If an error occurs, the adjustment result is not revised.

ADJ 4 Image lead edge position, image loss, void area, image off-center, image magnification ratio adjustment (Automatic adjustment)

The following adjustment items can be executed automatically with SIM50-28.

* ADJ 15

Print image position, image magnification ratio, void area, off-center adjustment (Print engine) (Manual adjustment)

* ADJ 16

Scan image magnification ratio adjustment (Manual adjustment)

* ADJ 17

Scan image off-center adjustment (Manual adjustment)

* ADJ 18

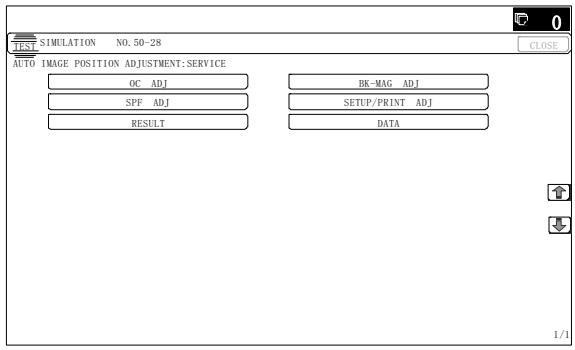
Copy image position, image loss adjustment (Manual adjustment)

(Menu in SIM50-28 mode)

Display/Item	Content
OC ADJ	Image loss off-center sub scanning direction image magnification ratio adjustment (Document table mode)
BK-MAG ADJ	Main scanning direction image magnification ratio adjustment
SPF ADJ	Image loss off-center sub scanning direction image magnification ratio adjustment (RSPF mode)
SETUP/ PRINT ADJ	Print lead edge adjustment, image off-center (each paper feed tray, duplex mode) adjustment
RESULT	Adjustment result display
DATA	Display of data used when an adjustment is executed

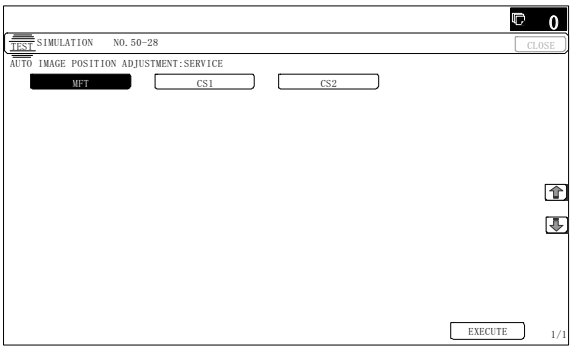
4-A Print image main scanning direction automatic magnification ratio adjustment (Print engine)

1) Enter the SIM50-28 mode.



2) Select [BK-MAG ADJ] with the key.

3) Select the paper feed tray with paper in it with the key. (Any paper size will do.)

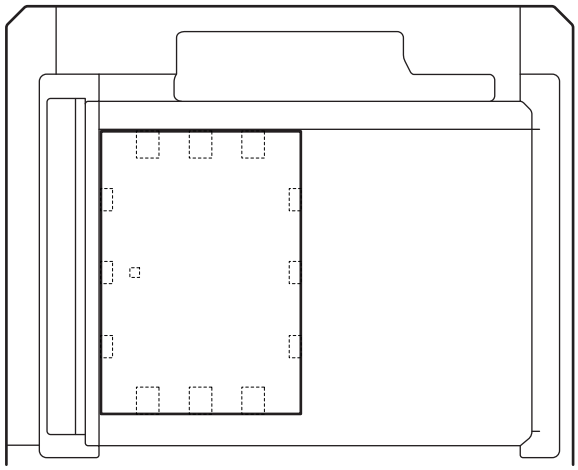


4) Press [EXECUTE] key.
The adjustment pattern is printed out.

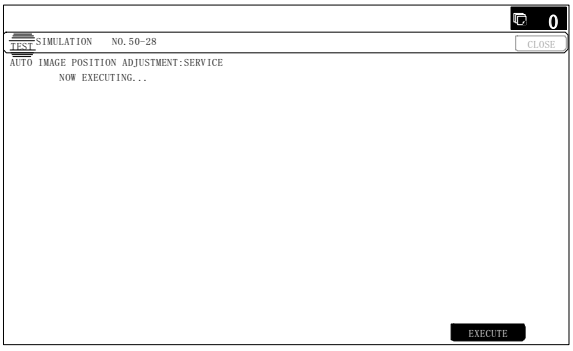
5) Set the adjustment pattern on the document table.

Important

Fit the adjustment pattern correctly with the document guide.
In this case, put 5 sheets of white paper on the printed adjustment pattern.



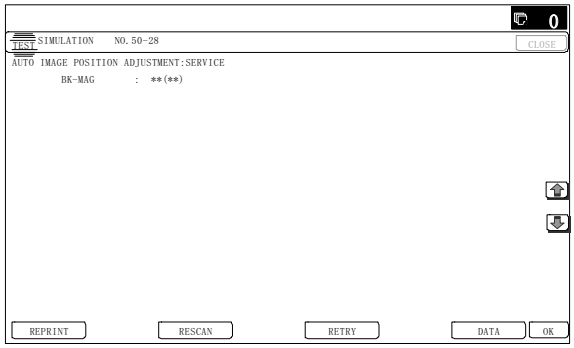
6) Press [EXECUTE] key.



The following item is automatically adjustment.

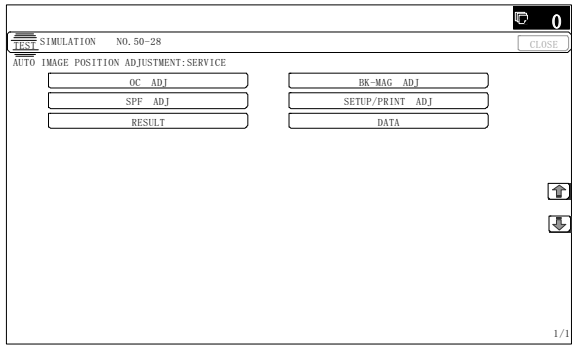
* Print image main scanning direction image magnification ratio.

7) Press [OK] key.
The adjustment result becomes valid.



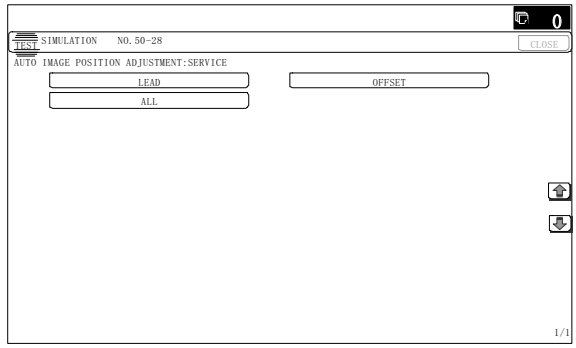
4-B Print image off-center automatic adjustment (Print engine) (Each paper feed tray)

1) Enter the SIM50-28 mode.



2) Select [SETUP/PRINT ADJ] with the key.

3) Select [ALL] with the key.



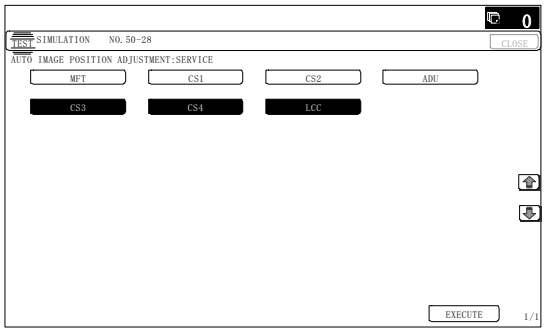
Note

By pressing [LEAD] or [OFFSET] key, the following items can be executed individually.

* [LEAD]: Print image lead edge image position adjustment
* [OFFSET]: Print image off-center adjustment

When [ALL] is selected, both of the above two items are executed simultaneously.

4) Select a paper feed tray to be adjusted.

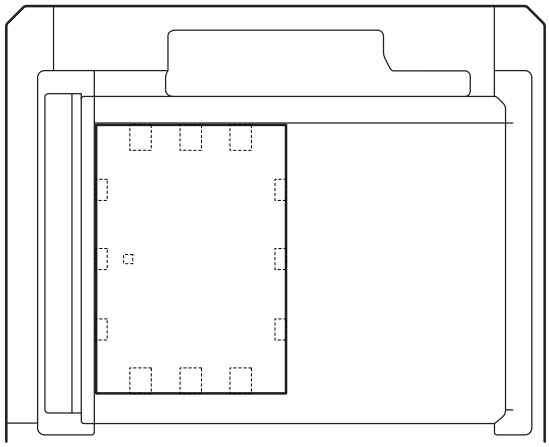


5) Press [EXECUTE] key.
The adjustment pattern is printed out.

6) Set the adjustment pattern on the document table.

Important

Fit the adjustment pattern correctly with the document guide.
In this case, put 5 sheets of white paper on the printed adjustment pattern.



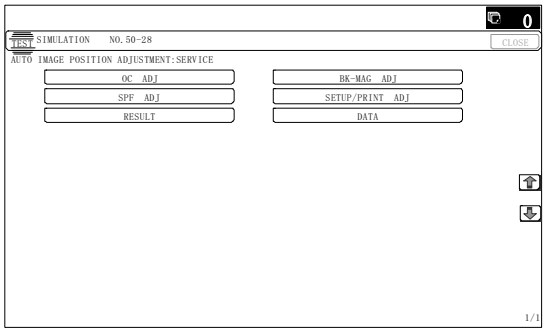
7) Press [EXECUTE] key.
The following item is automatically adjustment.
* Print image lead edge image position adjustment
* Print image off-center adjustment

8) Press [OK] key.
The adjustment result becomes valid.

Perform procedures 4) to 7) for each paper feed tray.

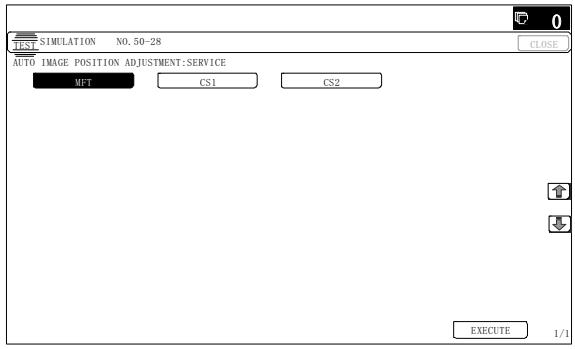
4-C Copy mode image lead edge position, image loss, void area, image off-center, sub scanning direction image magnification ratio automatic adjustment (Scanner) (Document table mode)

1) Enter the SIM50-28 mode.



2) Select [OC ADJ] with the key.

3) Select the paper feed tray with paper in it with the key.
(Any paper size will do.)

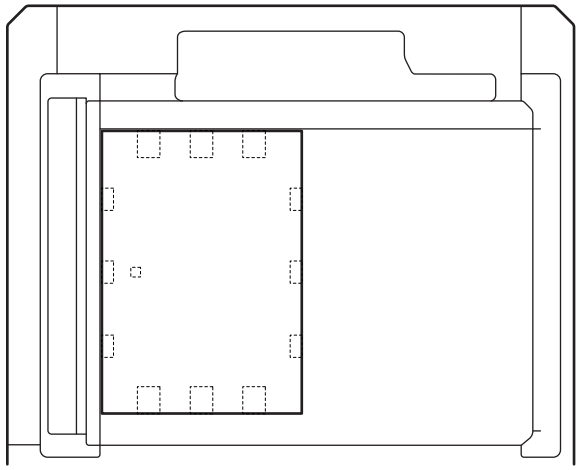


4) Press [EXECUTE] key.
The adjustment pattern is printed out.

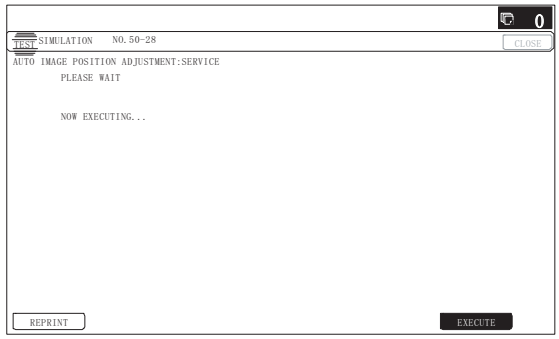
5) Set the adjustment pattern on the document table.

Important

Fit the adjustment pattern correctly with the document guide.
In this case, put 5 sheets of white paper on the printed adjustment pattern.



6) Press [EXECUTE] key.

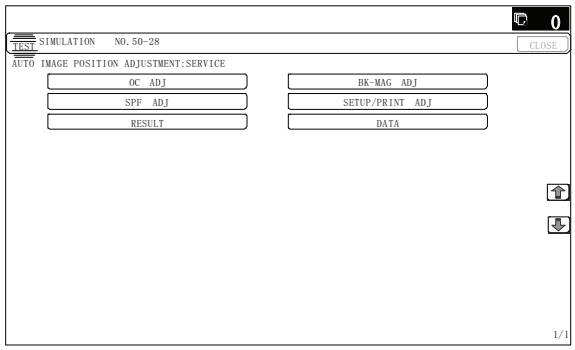


The following item is automatically adjustment.
* Copy lead edge image reference position adjustment, image off-center, sub scanning direction image magnification ratio automatic adjustment

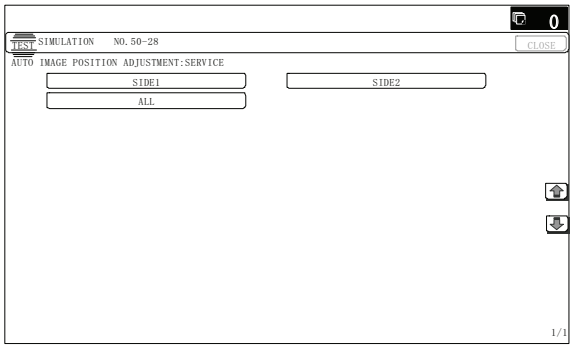
7) Press [OK] key.
The adjustment result becomes valid.

4-D Copy mode image lead edge position, image loss, void area, image off-center, sub scanning direction image magnification ratio automatic adjustment (Scanner) (RSPF mode)

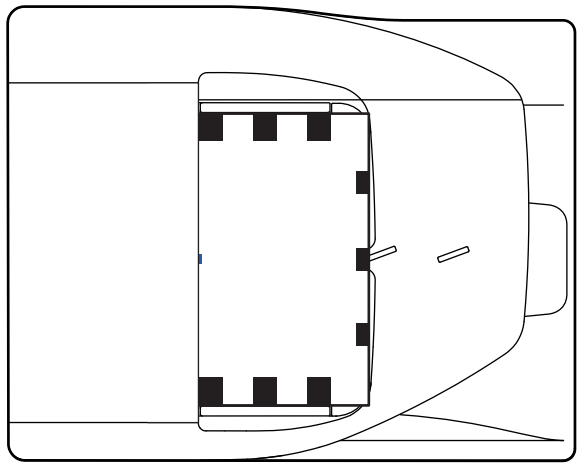
1) Enter the SIM50-28 mode.



2) Press the [SPF ADJ] key.



3) Proceed to one of the three screens for selecting the cassette used to print RSPF adjustment patterns by selecting the corresponding button:
SIDE1: RSPF adjustment for the front side
SIDE2: RSPF adjustment for the back side
ALL: RSPF adjustment for both the front and back sides
4) Select one of the cassettes that can be used to print RSPF adjustment patterns. (Multiple selection is not allowed.)
5) Press the [EXECUTE] key, and the machine starts self-print of RSPF adjustment patterns.
* The screen shows a message indicating that the machine is self-printing RSPF adjustment patterns.
When self-print finishes, the next screen appears where you can start RSPF adjustments.
6) RSPF adjustment patterns are loaded into the RSPF. (Set so that the pattern surface faces up.)

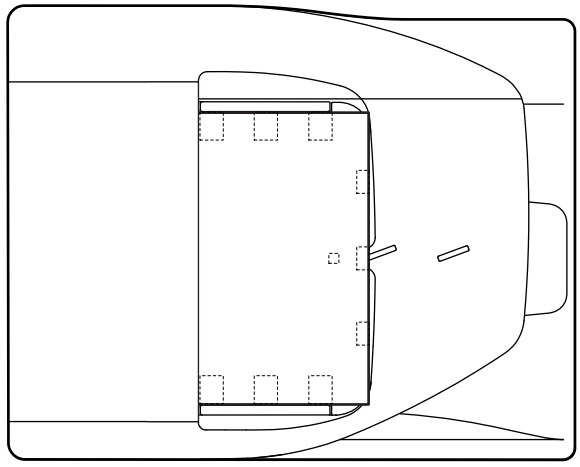


* By pressing the [REPRINT] key, you can return to the cassette selection screen and have the machine self-print RSPF adjustment patterns again.
7) Press the [EXECUTE] key, and the machine starts reading RSPF adjustment patterns (for the front side).
* The screen shows a message indicating that the machine is reading and calculating RSPF adjustment patterns (for the front side).
The machine starts calculating the adjustment amount (for the front side) after it has read the patterns for the front side.
After the machine has finished calculating the adjustment amount for the front side, the next screen appears where you can have the machine start reading RSPF adjustment patterns (for the back side).

Adjustment Item List

- RSPF original leading edge adjustment (front side)
- RSPF original off-center adjustment (front side)
- RSPF original sub-scan magnification adjustment (front side)

8) RSPF adjustment patterns are loaded into the RSPF. (Set so that the pattern surface faces down.)



* By pressing the [REPRINT] key, you can return to the cassette selection screen and have the machine self-print RSPF adjustment patterns again.

9) Press the [EXECUTE] key, and the machine starts loading RSPF adjustment patterns (for the back side).
   * The screen shows a message indicating that the machine is reading RSPF adjustment patterns (for the back side).
     The machine starts calculating the adjustment amount (for the back side) after it has read the patterns for the back side.
     After the machine has finished calculating the adjustment amount for the back side, the next screen appears where you can view the results of the adjustments.

<Adjustment Item List>

- RSPF original leading edge adjustment (back side)
- RSPF original off-center adjustment (back side)
- RSPF original sub-scan magnification adjustment (back side)

10) The adjustment result screen appears.
    This screen shows the current values along with the previous values in parentheses.
    * By pressing the [REPRINT] key, you can return to the cassette selection screen and have the machine self-print RSPF adjustment patterns (for the front and back sides) again.
    * To have the machine start re-reading the RSPF adjustment patterns (front and back sides), press the [RESCAN] key.
    * To return to the top menu without saving the adjustment values into EEPROM and RAM, press the [RETRY] key.
    * To display the data used for adjustment, press the [DATA] key.
11) To save the adjustment values into EEPROM and RAM and return to the top menu, press the [OK] key.
    * To return to the result screen, press the [BACK] key.

ADJ 5 Print engine image distortion adjustment / OPC drum phase adjustment / Color registration adjustment (Print engine section)

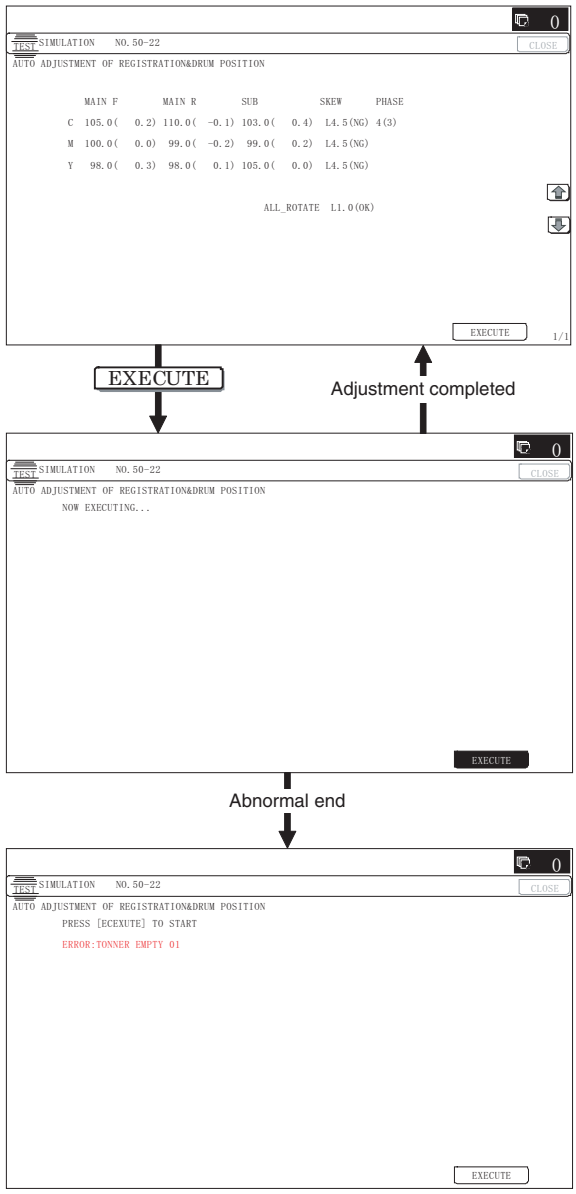
This adjustment must be performed in the following cases:

* When the color shift occurs.
* When the LSU is replaced.
* When the LSU is removed from the main unit.
* When the unit is installed or when the installing place is changed.
* When maintenance work is performed. (Replacement of the OPC drum, the OPC cartridge, the transfer unit, the transfer belt, etc.)
* When [ADJ 4A] / [ADJ 16A] Print engine image magnification ratio adjustment (BK) (main scanning direction) is performed.
* U2 trouble has occurred.
* When the PCU PWB is replaced.
* When EEPROM on the PCU PWB is replaced.
* When the color phase is not proper even after execution of the color balance adjustment.
* When the OPC drum drive section is disassembled.
* When the primary transfer unit is replaced. (when it is removed from the machine)
* When the developing unit or the OPC drum unit is removed from the machine.

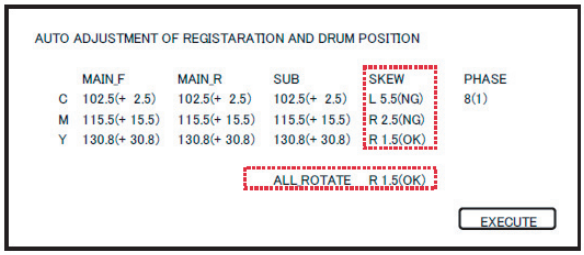
5-A Print engine image distortion adjustment (Manual adjustment) / OPC drum phase adjustment (Automatic adjustment) / Color registration adjustment (Automatic adjustment)

This adjustment performs the print engine image distortion adjustment, the OPC drum phase adjustment, and the color registration adjustment simultaneously.

1) Enter SIM50-22 mode.



2) Press [EXECUTE] key.
   [EXECUTE] key is highlighted and the image registration automatic adjustment is started. (It takes about 15 sec to complete the adjustment.)
3) When the adjustment is completed, [EXECUTE] key returns to the normal display, and the value of the adjustment result is displayed.
   The current skew level for each color is displayed on the SKEW display section.


AUTO ADJUSTMENT OF REGISTARATION AND DRUM POSITION
MAIN_F
MAIN_R
SUB
SKEW
PHASE
C 102.5(+ 2.5) 102.5(+ 2.5) 102.5(+ 2.5) L 5.5(NG) 8(1)
M 115.5(+ 15.5) 115.5(+ 15.5) 115.5(+ 15.5) R 2.5(NG)
Y 130.8(+ 30.8) 130.8(+ 30.8) 130.8(+ 30.8) R 1.5(OK)
ALL ROTATE R 1.5(OK)
EXECUTE

Display/ Item	Content		Display	Default	NOTE
MAIN F	C	Registration adjustment value main scanning direction (Cyan laser writing position F side)	1.0 - 199.0	100	
	M	Registration adjustment value main scanning direction (Magenta laser writing position F side)	1.0 - 199.0	100	
	Y	Registration adjustment value main scanning direction (Yellow laser writing position F side)	1.0 - 199.0	100	
MAIN R	C	Registration adjustment value main scanning direction (Cyan laser writing position R side)	1.0 - 199.0	100	
	M	Registration adjustment value main scanning direction (Magenta laser writing position R side)	1.0 - 199.0	100	
	Y	Registration adjustment value main scanning direction (Yellow laser writing position R side)	1.0 - 199.0	100	
SUB	C	Registration adjustment value sub scanning direction (Cyan drum → Black drum)	1.0 - 199.0	100	
	M	Registration adjustment value sub scanning direction (Magenta drum → Black drum)	1.0 - 199.0	100	
	Y	Registration adjustment value sub scanning direction (Yellow drum → Black drum)	1.0 - 199.0	100	
SKEW	C	Print skew amount calculation result (Cyan)	-99.9 - 99.9	0	If the value is positive (+), "L" is displayed at the head of the value. If negative (–), "R" is displayed. If the value is in the range of –2.1 - +2.1, "(OK)" is displayed at the bottom of the value. In the other cases, "(NG)" is displayed.
	M	Print skew amount calculation result (Magenta)	-99.9 - 99.9	0	
	Y	Print skew amount calculation result (Yellow)	-99.9 - 99.9	0	
ALL_ ROTATE	Print skew amount calculation result (Overall)		-99.9 - 99.9	0	If the value is positive (+), "L" is displayed at the head of the value. If negative (–), "R" is displayed. If the value is in the range of –1.6 - +1.6, "(OK)" is displayed at the bottom of the value. In the other cases, "(NG)" is displayed.
PHASE	OPC drum phase adjustment value		1 - 8	1	

4) Write down the displayed skew level.

Meaning of the skew level value and the adjustment procedure

* If "OK" is displayed for all items of SKEW ALL_ROTATE, C, M, and Y, there is no need to perform the adjustment.
* When "R" is displayed at the head of the value, turn the LSU skew adjustment screw clockwise.
* When "L" is displayed at the head of the value, turn the LSU skew adjustment screw counterclockwise.
* The turning amount of the adjustment screw corresponds to each adjustment value. "ALL_ROTATE" indicates the number of rotations, and C, M, and Y indicate numbers of clicks.

  The display value is rounded at the decimal point.
* "ALL_ROTATES" shows the number of rotations of adjustments for all the adjustment screws. "C, M, and Y (SKEW)" shows the number of adjustment click steps for each adjustment screw of C, M, and Y.

Contents in ( )

MIAN, SUB: Difference from the previous adjustment value of image registration.

Example:

If 105 for this time and 103 for the previous time, it is displayed as 105.0 (+2.0).

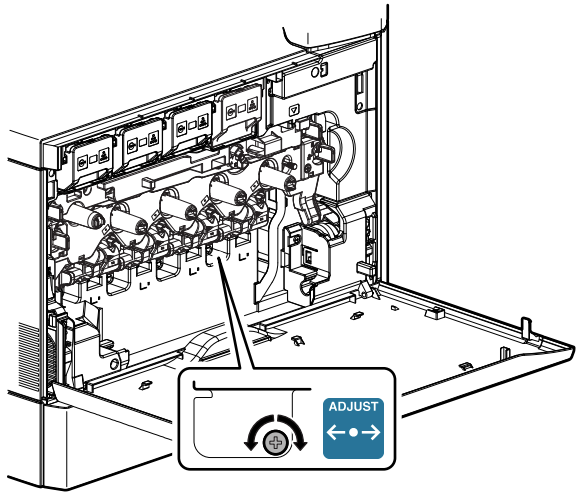
SKEW, ALL_ROTATE: Judgment of the LSU skew adjustment result. OK or NG.

PHASE: OPC drum phase adjustment value of the previous time

5) If the display of ALL_ROTATE is NG, turn all the LSU skew adjustment screws to adjust, and perform the procedures 2) to 4).

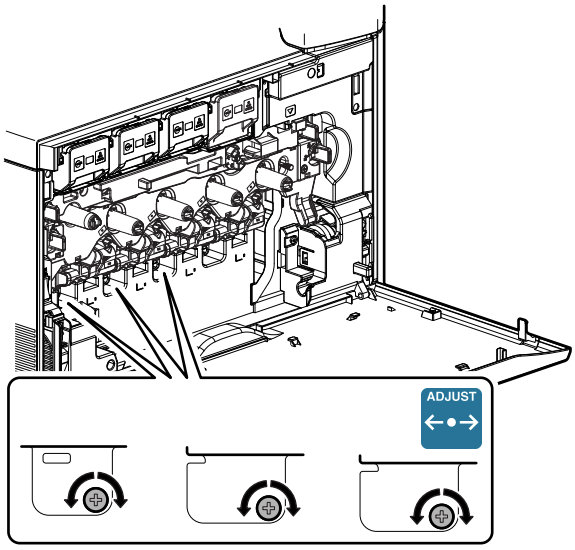
Repeat the procedures 2) to 5) until the display of ALL_ROTATE becomes OK. If the display of ALL_ROTATE is OK, go to the procedure 6).

For the adjustment, remove the front cover and the waste toner box, and turn the skew adjustment screw.



6) Repeat the procedures 2) to 4) again, and check to confirm that C, M, and Y (SKEW) are OK.

If any of them is NG, turn the LSU skew adjustment screw of the corresponding color to adjust.



Important

When the adjustment is made by turning the LSU skew adjustment screw of K, the states of C, M and Y (SKEW) are changed. Execute SIM50-22 to check to confirm that C, M, and Y (SKEW) are OK.

When an abnormality occurs, "ERROR" is displayed.

In this case, check each drive section and the process section.

The adjustment result can be checked by the following manual adjustment mode.

* ADJ 5B

  Image skew adjustment (Manual adjustment) (SIM50-20)

* ADJ 5C

  Color registration offset adjustment (SIM50-20)

Note

When the color registration is greatly shifted due to replacement of the LSU, etc, if SIM50-22 is used to perform the color registration automatic adjustment, an error may occur.

In this case, the adjustment may be properly executed by setting the adjustment items A - I of SIM50-20 to "100" and executing the automatic adjustment again.

If color shift in an actual print image differs in the center, the front side, and the rear side, the color shift offset adjustment can improve it. (Refer to ADJ 5C.)

Normally there is a difference in color shift in several dots. Perform the adjustment only when the adjustment is required.

5-B Print engine image skew (LSU skew) adjustment (Manual adjustment) (No need to adjust normally)

If a more accurate adjustment than the automatic adjustment ADJ 5A is required, use this method of adjustment.

This adjustment is made by changing the parallelism of the LSU unit scan laser beams for the OPC drum.

1) Enter the SIM 50-20 or 64-01 mode.
2) Select the paper feed tray with A3 (11" x 17") paper in it, and press [EXECUTE] key.
3) The image skew (image registration) adjustment pattern is printed.
4) Check the printed black image for any skew.

   Use the four cross points printed in black to measure the squareness.

   There are following two methods of checking the black image for any skew (right angle).

   Method 1

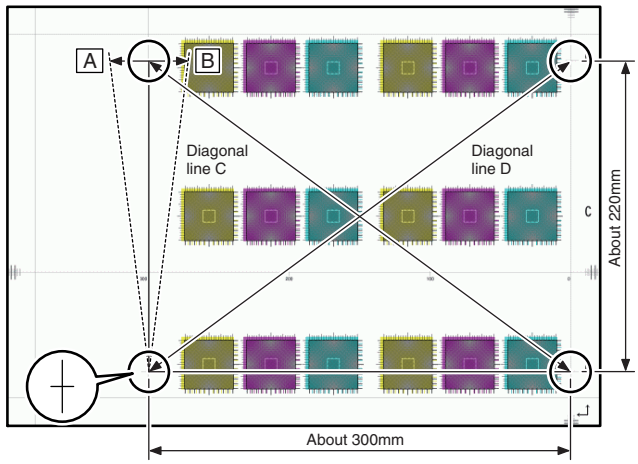
   Measure the distances between opposing corners of the rectangle print pattern, and compare the two distances to check the squareness.

   Method 2

   Check the squareness of the vertical and horizontal sides of the rectangle print pattern by using A3 or 11" x 17" paper sides.

   Important

   In the case of Method 2, the right angle of paper to be used may not be exact. Be sure to check the right angle of paper to be used in advance.



   Method 1

   Measure the length of the diagonal lines of the rectangle print pattern.

   Calculate the difference between the measured lengths C and D of the diagonal lines.

   Check to insure that the difference between C and D is in the following range.

   C - D = 0.8mm

   If the difference between C and D is in the above range, there is no need to adjust.

   Method 2

   Fit the side of A3 or 11" x 17" paper to the long side of the rectangle print pattern.

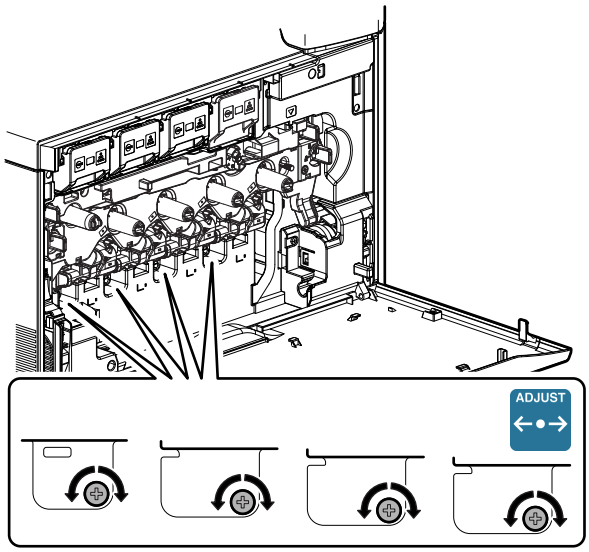
   Measure the slant (skew) of the vertical side for the horizontal side of paper as shown in the figure.

   If the above distance is 0.5mm or less, there is no need to adjust.

   If the above condition is not satisfied, perform the following procedure.

5) Open the front cover, remove the waste toner box, and turn the four LSU image skew adjustment screws in the same direction by the same amount.

For the adjustment, remove the front cover and the waste toner box, and turn the skew adjustment screw.



(Skew adjustment screw rotation direction)

When C is greater than D in the method 1 or there is some skew in the direction A in the method 2, turn the screw clockwise.

When C is smaller than D in the method 1 or there is some skew in the direction B in the method 2, turn the screw counterclockwise.

(Reference of the rotation amount of the skew adjustment screw)

In case of the method 1, 0.8mm/about 1.5 rotations

In case of the method 2, 0.5mm/about 1.5 rotations

Repeat the procedures 2) to 6).

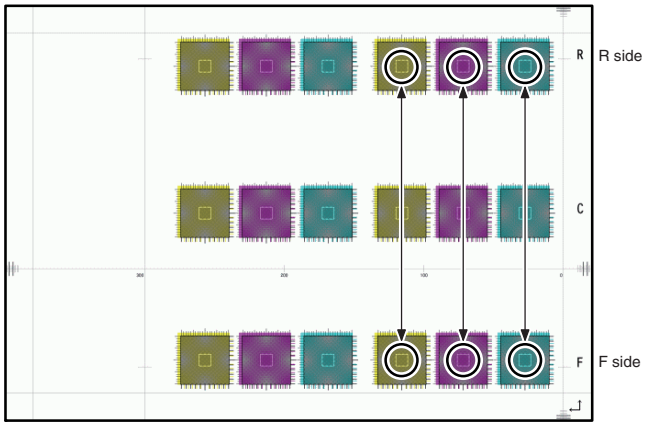
After completion of the black image skew adjustment, go to the procedure 7).

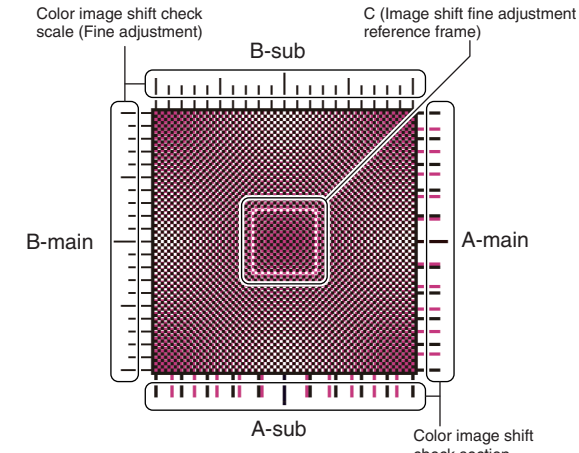
6) Perform the same procedures as 1) and 2).

7) Check the printed color image for any skew.

If the difference between the shift amounts on the F and R sides is within ± 1 scale of the fine adjustment check scale, there is no need to perform the adjustment.

Measure the skew amount from the print patterns on the front and rear sides of each color.





A-main: Main scan rough adjustment pattern
A-sub: Sub scan rough adjustment pattern
B-main: Main scan fine adjustment scale
B-sub: Sub scan fine adjustment scale
C: Main scan sub scan fine adjustment pattern

In each Y/M/C color print pattern printed separately in the F side and in the R side, note the same print color pattern and check to confirm that the F side and the R side are in the same condition.

Rough adjustment pattern check:

Check the sub scan rough adjustment color image shift check section on the R side and the F side of each color, use the center position of the black scale as the reference, and check the balance in shifts of the color image line positions in the positive and the negative directions. The balance in the R side must be the same as that in the F side.

Fine adjustment pattern check:

Check the square frames on the R side and the F side of each color. (Normally five sections of high density can be seen.) Check the sub scanning direction position of the center area of high density (one of the above five sections). These must be on the same position on the R side and the F side.

In this case, use the sub scan direction color image shift check scale (fine adjustment) as the reference.

Visually check the color density and make the darkest section as the center, and use it as the read value of the shift amount.

Check that the difference in the center position of the dark density section is within ±1 step.

The positional relations of the front and the rear frame of the print color patterns of a same color are compared. There is no need that all the colors are in the same state. Compare only the positional relations of color patterns of a same color.

If the above condition is not satisfied, perform the following procedure.

8) Turn the LSU skew adjustment screw of the adjustment target color to adjust.

(Skew adjustment screw rotation direction)

When the F side is skewed to the right side for R side: Turn the screw clockwise.

When the F side is skewed to the left side for the R side: Turn the screw counterclockwise.

(Reference of the rotation amount of the skew adjustment screw)

Skew of difference by one step between F and R sides (Difference by one scale of the fine adjustment check scale) / Turn for about 2 clicks.

Repeat the procedures 7) to 8) until a satisfactory result is obtained.

5-C Color registration offset adjustment (No need to adjust normally)

This adjustment is used to set the offset value for the automatic color registration adjustment (ADJ 5A).

If there is any difference in color phase at the center and the four corners of an actual print image, this adjustment may improve it. Especially when there is any color shift at the center area, this adjustment may improve it effectively.

This adjustment cannot eliminate color shifts in all the areas, but average the overall color shifts.

After the automatic adjustment, use this color registration offset adjustment to correct color shift partially, performing the adjustment efficiently.

Note

Before execution of this adjustment, check to confirm that the following adjustment has been properly made.

* ADJ 5A or ADJ 5B image skew adjustment (LSU unit)

[Kinds of adjustment values]

There are following two kinds of registration adjustment values.

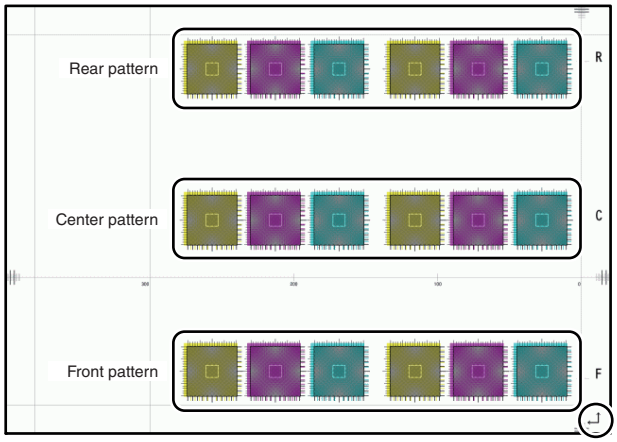
- Base registration adjustment value: XXX(FRONT)/XXX(REAR)

  They are manual adjustment values and automatic adjustment values, and reflected when the automatic registration adjustment is executed. It varies for every operation of the automatic registration adjustment.
- Offset adjustment values: OFFSETXXF/OFFSETXXR

  They are the offset adjustment values added to the above base registration adjustment values, and are not changed unless SIM50-20 is executed to change.

1) Enter SIM50-20 mode.
2) Select the paper feed tray with A3 (11" x 17") paper in it.
3) Press [EXECUTE] key.

   The color image registration check pattern is printed.



Reference arrow mark

4) Check the color image registration.

   There are 6 color image registration patterns in total; two on each of the F side, the R side, and the center. Check all the patterns to confirm that they are within the specified range. Also check to confirm that there is not much shift in each color image registration check pattern.

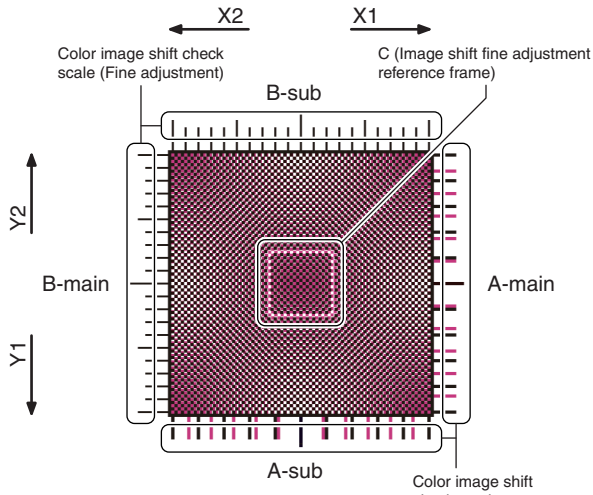
   Note

   There are two kinds of adjustment: one in the main scanning direction and the other in the sub scanning direction. The vertical direction in the above figure is that in the main scanning direction, and the horizontal direction is that in the sub scanning direction.

There are also two kinds of adjustments: the rough adjustment and the fine adjustment. Perform the rough adjustment then perform the fine adjustment deliberately.

For the main scan direction image registration, the offset on the F side, the R side, and at the center is independently adjusted.

If there is a difference in the sub scanning direction image registration between the F and R sides, perform the skew adjustment (ADJ 5A).



A-main: Main scan rough adjustment pattern
A-sub: Sub scan rough adjustment pattern
B-main: Main scan fine adjustment scale
B-sub: Sub scan fine adjustment scale
C: Main scan sub scan fine adjustment pattern

Check the print patterns of the rough adjustment and the fine adjustment of 18 check patterns.

How to check the rough adjustment pattern and input of the adjustment value:

Visually check the color image registration check section, use the center position of the black scale as the reference, and check the shift balance in the positive and negative directions at the color image line position.

Use the center position of the black scale as the reference, and check that the color image line is symmetrical in the positive side and the negative side.

If shift is in the arrow mark X1 and Y1, increase the adjustment value. If shift is in the arrow mark X2 and Y2, decrease the adjustment value.

The reference arrow on the check pattern faces the positive direction.

(Reference adjustment value)

1 scale/10 (When the set value is changed by 10, shift is made by 1 scale.)

How to check the fine adjustment pattern and input of the adjustment value:

Check to confirm that the darkest spot (one of 5 spots seen normally) is within the center area of the image registration adjustment reference frame in the square frame.

At that time, use the color image registration check scale (fine adjustment) as the reference.

Visually check and consider the darkest section of color density as the center, and measure the shift from it.

Check to confirm that the center of the dark density section is within ± 1 step.

(If the fine adjustment print pattern is in the range of 0 ± 1 for the fine adjustment reference pattern scale, there is no need to adjust.)

If shift is in the arrow mark X1 and Y1, increase the adjustment value. If shift is in the arrow mark X2 and Y2, decrease the adjustment value.

(Reference adjustment value)

1 scale/1 (When the set value is changed by 1, shift is made by 1 scale.)

If there is a considerable difference in color shift in the square and at the center area, perform the adjustment.

Select an adjustment item (OFF SET X F / OFF SET X R / OFF SET X S), and change the adjustment value to adjust.

OFF SET X F: F side main scanning direction registration offset set value (The color shift on the F side and at the center area is changed.)

OFF SET X D: R side main scanning direction registration offset set value (The color shift on the R side and at the center area is changed.)

OFF SET X S: Sub scanning direction registration offset set value (Color is shifted to the sub scanning direction overall.)

Important

When the adjustment value of OFF SET X F and OFF SET X R are changed, the color at the center area will be affected. Consider this when executing the adjustment.

(Adjustment conditions and method)

To adjust evenly overall, adjust so that the color shifts on the F side, the R aide and at the center are of the same level.

To adjust with the center area most focused, adjust so that the color shift at the center becomes smaller than that on the F side and the R side.

When the offset adjustment value is 0, if the color registration adjustment (automatic adjustment) is performed, the color shift on the F side and that on the R side are automatically adjusted to be smaller than that on the center area.

Display/Item		Content	Adjustment value range	Default value
A	CYAN (FRONT)	Image registration adjustment value (Main scanning direction) (Cyan) (F side)	1 - 199	100
B	CYAN (REAR)	Image registration adjustment value (Main scanning direction) (Cyan) (R side)	1 - 199	100
C	MAGENTA (FRONT)	Image registration adjustment value (Main scanning direction) (Magenta) (F side)	1 - 199	100
D	MAGENTA (REAR)	Image registration adjustment value (Main scanning direction) (Magenta) (R side)	1 - 199	100
E	YELLOW (FRONT)	Image registration adjustment value (Main scanning direction) (Yellow) (F side)	1 - 199	100
F	YELLOW (REAR)	Image registration adjustment value (Main scanning direction) (Yellow) (R side)	1 - 199	100
G	CYAN (SUB)	Image registration adjustment value (Sub scanning direction) (Cyan)	1 - 199	100
H	MAGENTA (SUB)	Image registration adjustment value (Sub scanning direction) (Magenta)	1 - 199	100
I	YELLOW (SUB)	Image registration adjustment value (Sub scanning direction) (Yellow)	1 - 199	100
J	OFFSET CF	Image registration offset adjustment value (Main scanning direction) (Cyan) (F side)	1 - 199	100
K	OFFSET CR	Image registration offset adjustment value (Main scanning direction) (Cyan) (R side)	1 - 199	100
L	OFFSET MF	Image registration offset adjustment value (Main scanning direction) (Magenta) (F side)	1 - 199	100
M	OFFSET MR	Image registration offset adjustment value (Main scanning direction) (Magenta) (R side)	1 - 199	100
N	OFFSET YF	Image registration offset adjustment value (Main scanning direction) (Yellow) (F side)	1 - 199	100
O	OFFSET YR	Image registration offset adjustment value (Main scanning direction) (Yellow) (R side)	1 - 199	100
P	OFFSET CS	Image registration offset adjustment value (Sub scanning direction) (Cyan)	1 - 199	100
Q	OFFSET MS	Image registration offset adjustment value (Sub scanning direction) (Magenta)	1 - 199	100
R	OFFSET YS	Image registration offset adjustment value (Sub scanning direction) (Yellow)	1 - 199	100

ADJ 6 Scan image distortion adjustment (Document table mode)

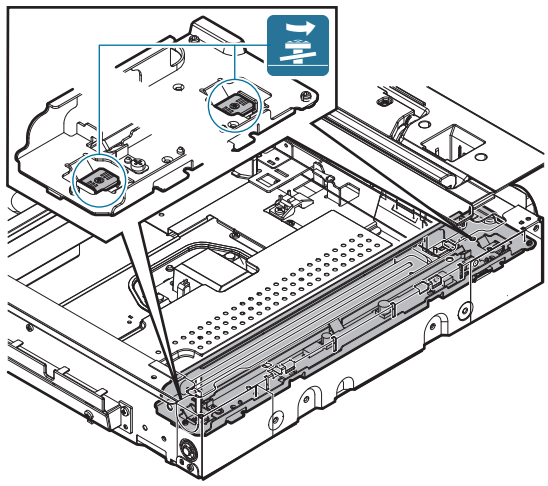
This adjustment must be performed in the following cases:

* When the scanner (reading) section is disassembled.
* When the copy image is distorted.

6-A Scanner (reading) unit parallelism adjustment

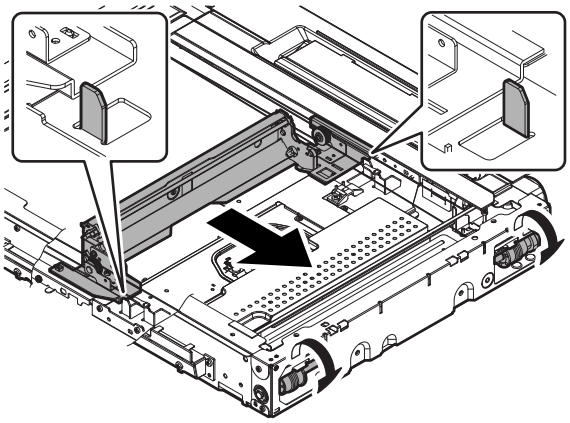
Before execution of this adjustment, remove the document table glass.

1) Remove the lamp unit, and then loosen the screws which are fixing the scanner unit A and the drive wire. Release the scanner unit A from the drive wire.



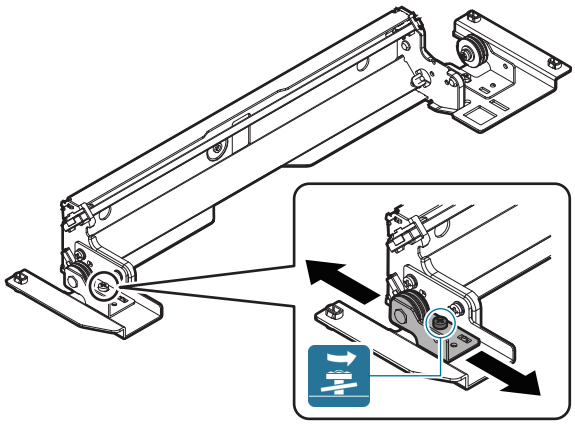
2) Turn the scanner drive pulley manually and shift the scanner unit B to bring it into contact with the stopper.

When the scanner unit B is in contact with the two stoppers on the front and the rear frames simultaneously, the parallelism is proper.



If this requirement is not met, do the following steps.

3) Loosen the fixing screw of the pulley angle on the front frame side of the scanner unit B.



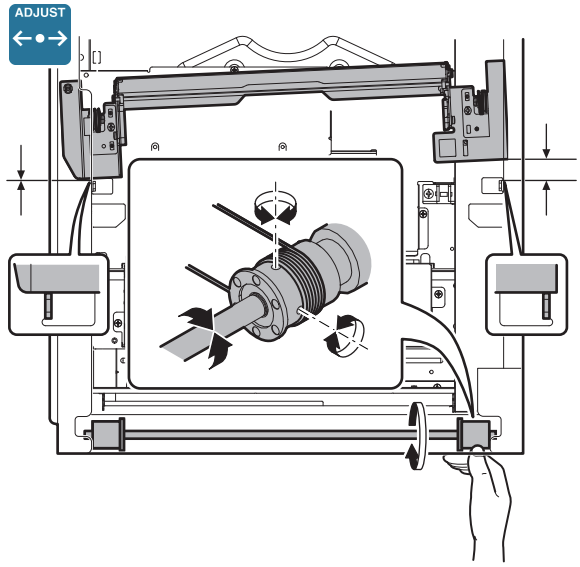
4) Adjust the position of the pulley angle on the front frame side of the scanner unit B so that it is in contact with two stoppers on the front and the rear frames simultaneously.

5) Fix the pulley angle on the front frame side of the scanner unit B.

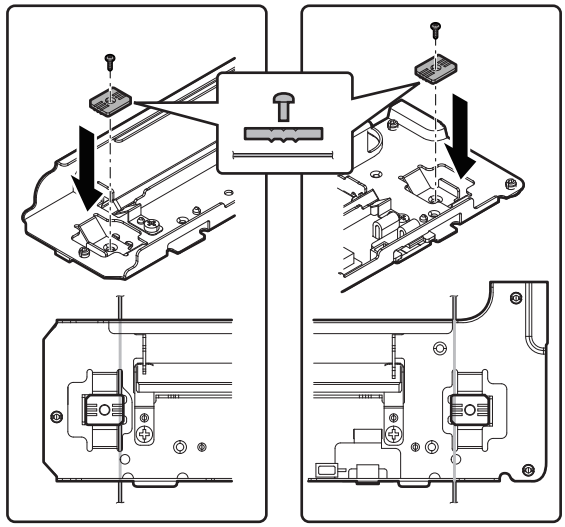
If a satisfactory result is not obtained from the above procedures, perform the following procedures.

Loosen the fixing screw of the scanner unit drive pulley which is not in contact.

Without moving the scanner unit drive shaft, turn the scanner unit drive pulley manually and adjust so that the scanner unit B is in contact with both stoppers on the front frame and the rear frame simultaneously. (Change the relative position of the scanner unit drive pulley and the drive shaft.) Fix the scanner unit drive pulley fixing screw.

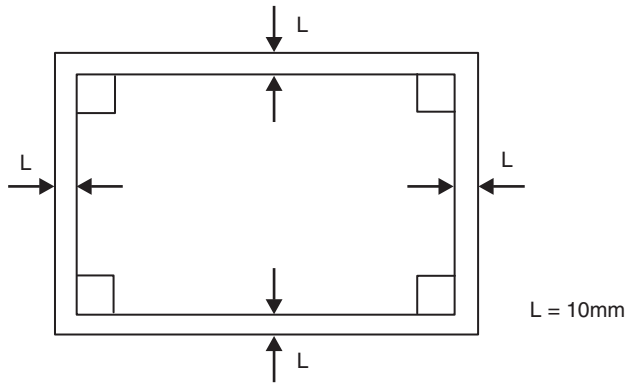


6) With the scanner unit B in contact with both stoppers, fit the edge of the scanner unit A with the right edge of the frame, and fix the scanner unit A with the fixing screw.

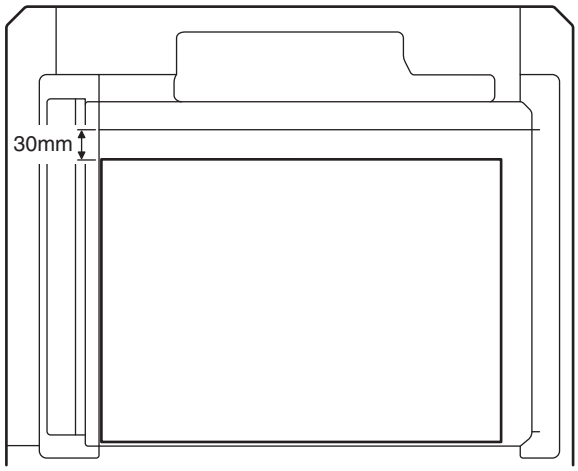


6-B Scan image (sub scanning direction) distortion adjustment

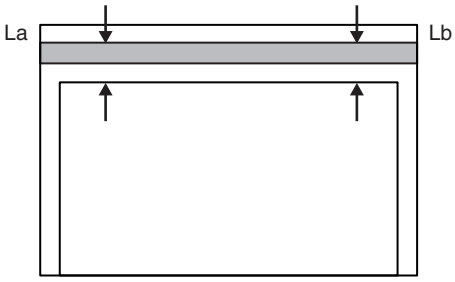
1) Make a test chart on A3 (11" x 17") paper as shown below. (Draw a rectangular with four right angles.)



2) Set the test chart prepared in the procedure 1) on the document table. (Shift the test chart edge 30mm from the reference position as shown below.) With the document cover open, make a copy on A3 (11" x 17") paper.

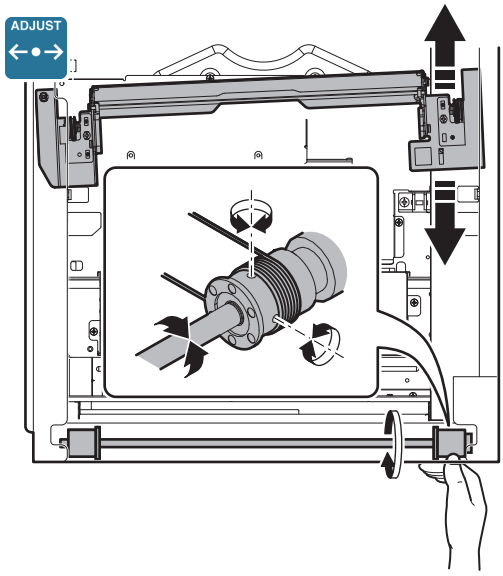


3) Check for distortion in the sub scanning direction.
If La = Lb, there is no distortion.



If there is any distortion in the sub scanning direction, perform the following procedures.

4) Loosen either one of the fixing screws of the scanner unit drive pulley. (Either one on the front frame or on the rear frame will do.)



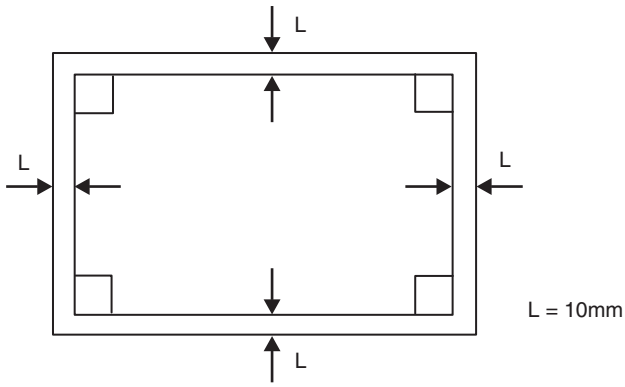
5) Without moving the scanner unit drive shaft, manually turn the scanner unit drive pulley to change the parallelism of the scanner unit A and B. (Change the relative position of the scanner unit drive pulley and the drive shaft.)

6) Tighten the scanner unit drive pulley fixing screw.

Repeat the procedures 2) - 6) until the condition of the procedure 3) is satisfied.

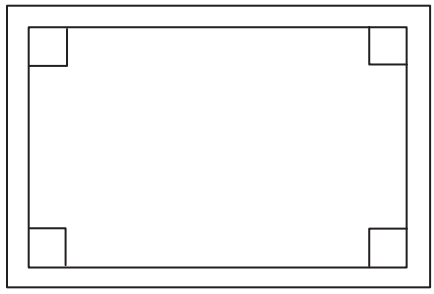
6-C Scan image (main scanning direction) distortion adjustment

1) Make a test chart on A3 (11" x 17") paper as shown below. (Draw a rectangular with four right angles.)



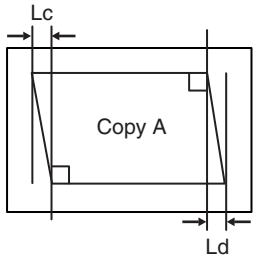
2) Set the test chart prepared in the procedure 1) on the document table, and make a copy on A3 (11" x 17") paper.

3) Check for distortion in the main scanning direction.
If the four angles of the rectangle of the copy image are right angles, it is judged that there is no distortion. (The work is completed.)

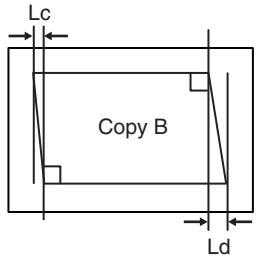


If there is any distortion in the main scanning direction, perform the following procedure.

4) Check the difference (distortion balance) between left-hand and right-hand side images distortions.



There is no difference between the distortion on the right and that on the left.
Lc = Ld



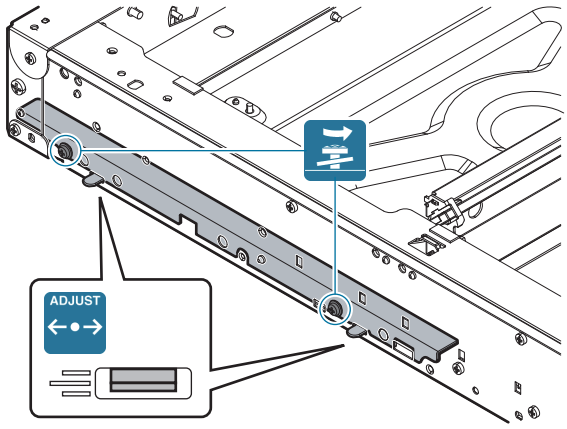
There is some difference between the distortion on the right and that on the left.
Lc ≠ Ld

If Lc = Ld, the distortion on the left is equal to that on the right. (The distortions are balanced.)

If the above condition is satisfied, go to the procedure 6).

If not, perform the following procedures.

5) Change the height balance of the scanner rail on the front frame side.



Remove the lower cabinet of the operation panel. Loosen the scanner rail fixing screw to change the balance between the right and the left heights of the scanner rail.

Repeat the procedures 2) - 5) until the difference between the image distortions (distortion balance) is deleted.

6) Without changing the balance of the scanner rail on the front frame side, change the overall height.

7) Set the test chart prepared in the procedure 1) on the document table, and make a copy on A3 (11" x 17") paper. Check that the distortion in the main scanning direction is within the specified range.

Repeat the procedures 6) and 7) until the distortion in the main scanning direction is in the specified range.

ADJ 7 Scanner image skew adjustment (RSPF mode)

This adjustment must be performed in the following cases:

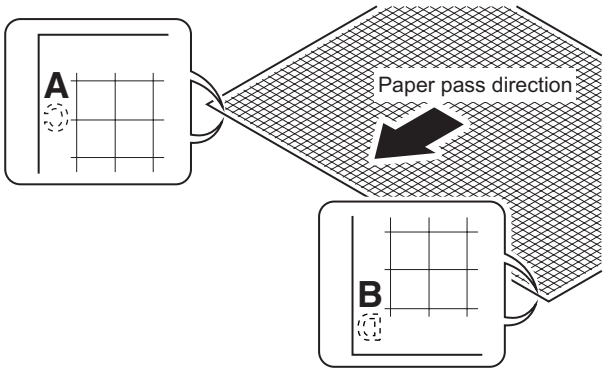
* The RSPF section has been disassembled.
* When replacing the RSPF unit.
* The RSPF unit generates skewed scanned images.

1) Create an adjustment chart by printing in duplex mode the self-print pattern (grid pattern) specified in Simulation 64-2.

SIM 64-2 set values

A = 1, B = 1, C = 254, D = 255

Make sure that the print grid pattern is almost in parallel with the paper edges, and apply position marks A and B to the leading and trailing edges of the paper surface lead edge section.

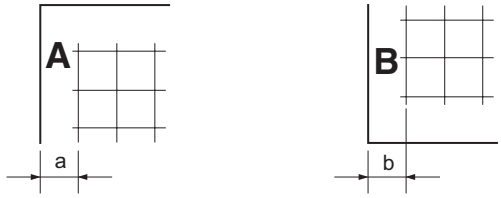


2) Copy the adjustment chart (created in step 1) to A3 (11" x 17") paper in RSPF duplex mode, and then check the image for skews (Set in the RSPF feed tray so that the mark on the adjustment chart is at the edge).

- Check with one of the following methods.

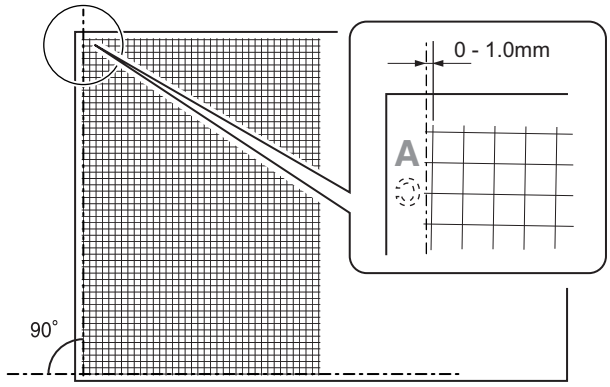
Check Method 1

(Front side)
Make sure that the output satisfies the condition: |a-b| ± 1 mm



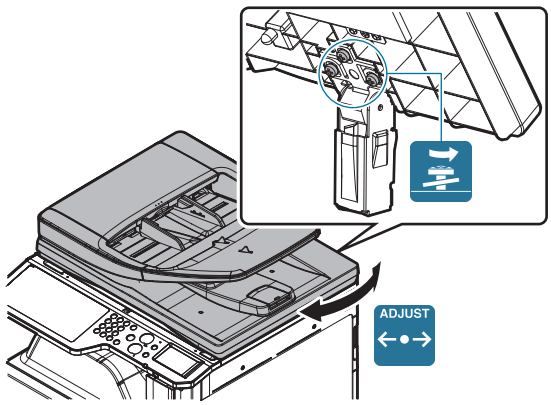
Check Method 2

Check that the squareness of the main scanning direction print line for the longitudinal direction of paper is within 1.0mm.



If the copy image is not in the above state, perform the procedure 3).

3) Open the RSPF unit, and loosen the fixing screw of the hinge.



4) Slide the RSPF unit in the arrow direction to make the skew adjustment.

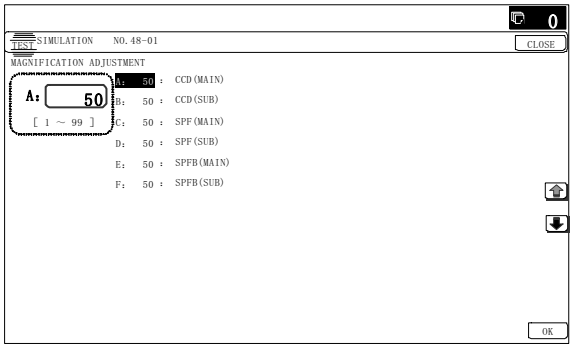
5) Make a copy again and measure (a) and (b) on the copied test chart. Repeat procedures 2) to 5) until the condition ((a) - (b) = ± 1mm or less) is satisfied.

ADJ 8 Scan image focus adjustment

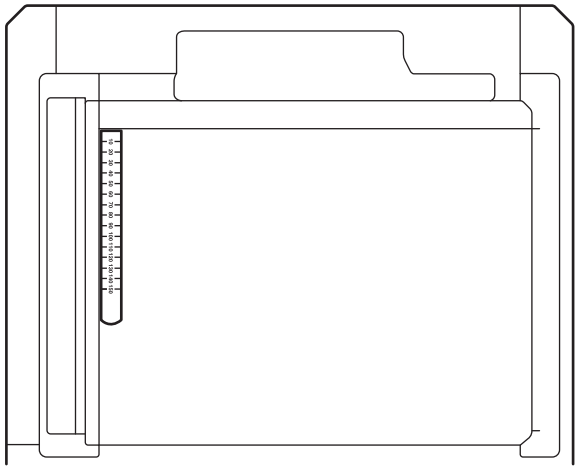
This adjustment must be performed in the following cases:

* The CCD unit has been removed from the machine.
* The CCD unit has been replaced.
* When the copy image focus is not properly adjusted.
* When the copy magnification ratio in the copy image main scanning direction is not properly adjusted.
* U2 trouble has occurred.

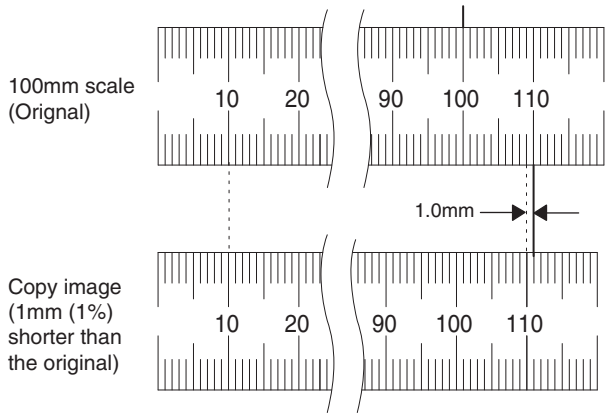
1) Enter the SIM 48-1 mode.



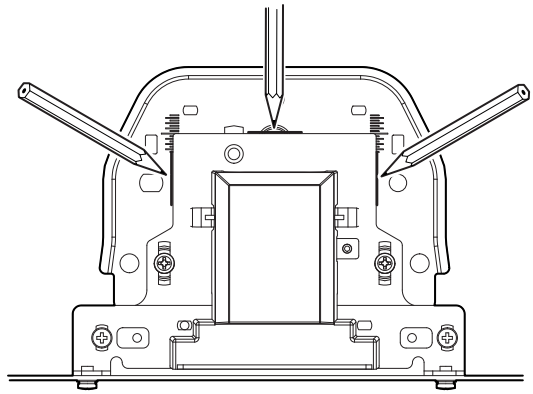
2) Set the adjustment item CCD (MAIN) to 50 (default value).
   Select the adjustment item with the scroll key, and enter the adjustment value with 10-key and press [OK] key.
3) Place a scale on the original table as illustrated below.



4) Make a normal copy on A4 paper.
   Go to the copy mode, and make a copy.
5) Compare the copied image of the scale and the actual scale length in terms of length.
6) Obtain the copy magnification ratio correction ratio in the main scanning direction from the following formula.
   Main scanning direction copy magnification ratio correction ratio = (Original size - Copy image size) / Original size x 100%
   (Example)
   Compare the scale of 10mm with the scale of 10mm on the copy image.
   Main scanning direction copy magnification ratio correction ratio = (100 - 99) / 100 x 100 = 1



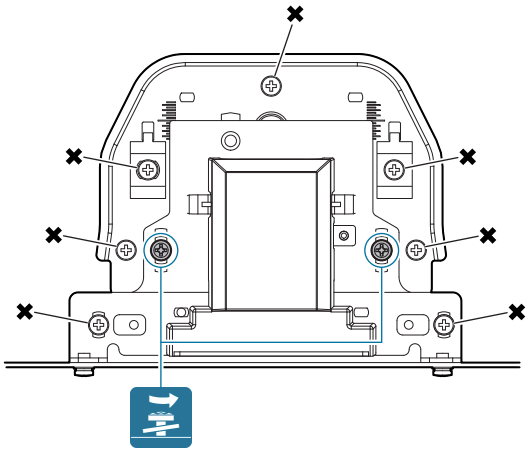
   If the copy magnification ratio is not satisfactory, perform the following procedures.
7) Remove the document table glass.
8) Remove the dark box cover.
9) To prevent against shift of the CCD unit optical axis, mark the CCD unit base as shown below.



Note

This procedure must be executed also when the CCD unit is replaced.

10) Loosen the CCD unit fixing screws.



Important

Never loosen the screws marked with X.

If any one of these screws is loosened, the position and the angle of the CCD unit base may be changed to cause a problem, which cannot be adjusted in the market. In that case, the whole scanner unit must be replaced.

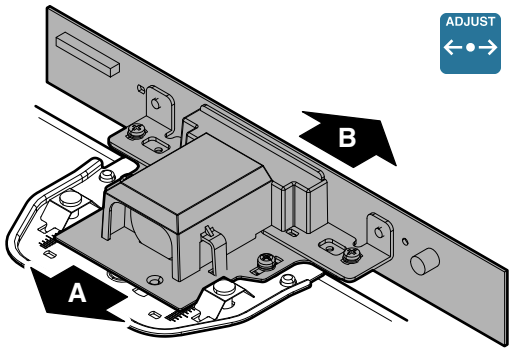
11) Slide the CCD unit in the arrow direction (CCD sub scanning direction) to change the installing position.

When the copy image is longer than the original scale, shift the CCD unit in the direction B. When the copy image is shorter than the original scale, shift the CCD unit in the direction A.

One scale of mark-off line corresponds to 0.2%.

At that time, fix the CCD unit so that it is in parallel with the scale on the front and the rear side of the CCD unit base.

* Fix the CCD unit so that it is in parallel with the line marked in procedure 9).



12) Make a copy and check the copy magnification ratio again.

If the copy magnification ratio is not in the range of 100 ± 1%, repeat the procedures of 9) - 11) until the condition is satisfied.

Important

By changing the CCD unit fixing position with the simulation 48-1 adjustment value at 50, the copy magnification ratio is adjusted within the specified range (100 ± 1.0%) and the specified resolution is obtained based on the optical system structure.

ADJ 9 Print lead edge image position adjustment (Printer mode)

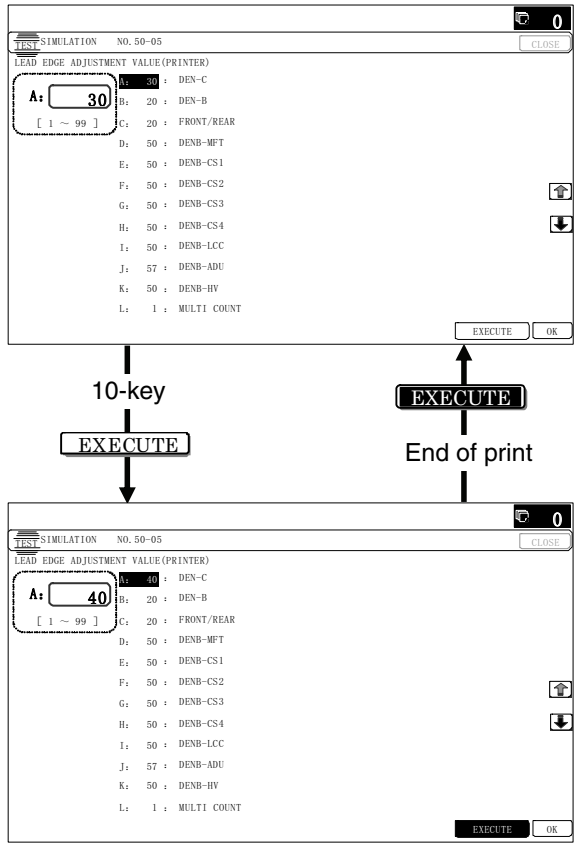
This adjustment must be performed in the following cases:

* When the registration roller section is disassembled.
* When the LSU is replaced or removed.
* U2 trouble has occurred.
* The PCU PWB has been replaced.
* The EEPROM of the PCU PWB has been replaced.

Note

This adjustment is performed by the user to increase the lead edge void area to greater than the standard value (3mm) in the printer mode.

1) Enter the SIM 50-5 mode.



2) Select the set item L with the scroll key, and enter the value corresponding to the paper feed tray with A4 (11" x 8.5") paper in it.

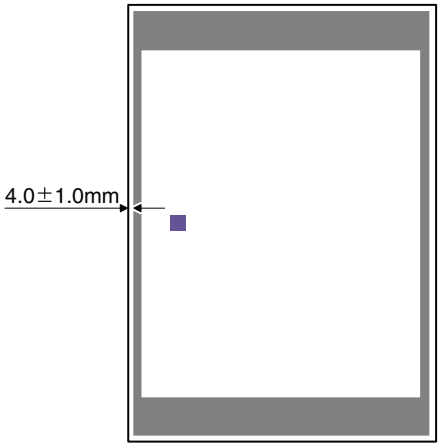
Display/Item			Content		Setting range		Default
A	DEN-C		Printer lead edge image position adjustment		1 - 99		30
B	DEN-B		Rear edge void area adjustment		1 - 99		30
C	FRONT/REAR		FRONT/REAR void area adjustment		1 - 99		20
D	DENB-MFT		Manual feed rear edge void area adjustment correction value		1 - 99		50
E	DENB-CS1		Tray 1 rear edge void area adjustment correction value		1 - 99		50
F	DENB-CS2		Tray 2 rear edge void area adjustment correction value		1 - 99		50
G	DENB-CS3		Tray 3 rear edge void area adjustment correction value		1 - 99		50
H	DENB-CS4		Tray 4 rear edge void area adjustment correction value		1 - 99		50
I	DENB-LCC		LCC rear edge void area adjustment correction value		1 - 99		50
J	DENB-ADU		ADU rear edge void area adjustment correction value		1 - 99		50
K	DENB-HV		Heavy paper correction value		1 - 99		50
L	MULTI COUNT		Number of print		1 - 999		1
M	PAPER	MFT	Tray selection	Manual paper feed	1 - 5	1	2 (CS1)
		CS1		Tray 1		2	
		CS2		Tray 2		3	
		CS3		Tray 3		4	
		CS4		Tray 4		5	
N	DUPLEX	YES	Duplex print selection	Yes	0 - 1	0	1 (NO)
		NO		No		1	

3) Press [EXECUTE] key.

The adjustment pattern is printed.

4) Measure the distance from the paper lead edge the adjustment pattern to the image lead edge, and check to confirm that it is in the standard adjustment value range.

Standard adjustment value: 4.0 ± 1.0mm



If the above requirement is not met, do the following steps.

5) Select the adjustment target of the paper feed mode adjustment item DENC with the scroll key.

6) Change the adjustment value.

Enter the adjustment value and press the [OK] key or the [EXECUTE] key.

When [EXECUTE] key is pressed, the adjustment pattern is printed.

When the adjustment value is increased, the distance from the paper lead edge to the image lead edge is increased. When the adjustment value is decreased, the distance is decreased.

When the set value is changed by 1, the distance is changed by about 0.1mm.

Repeat the procedures 4) - 6) until the condition of 4) is satisfied.

ADJ 10 Color balance/density adjustment

(1) Note before execution of the color balance/density adjustment

* Requisite conditions before execution of the color balance/density adjustment

Before execution of the color balance/density adjustment, check to insure that the adjustments which affect the color balance/density have been completed properly.

The importance levels of them are shown below.

(Since the following items affect the color balance/density directly, they must be adjusted or set before execution of the image quality adjustments.)

1) The following adjustment items must be adjusted properly.

Job No	Adjustment item			Simulation
ADJ 3	Image density sensor adjustment	ADJ 3A	Image density sensor calibration	44-13
ADJ 5	Print engine image distortion adjustment / OPC drum phase adjustment / Color registration adjustment (Print engine section)			50-22/20

(Though the following items affect the color balance/density, there is no need to adjust them frequently. When, however, a trouble occurs, they must be checked and adjusted.)

1) The following items must be adjusted properly.

Job No	Adjustment item			Simulation
ADJ 1	Adjust the developing unit	ADJ 1A	Adjust the developing doctor gap	
		ADJ 1B	Adjust the developing roller main pole position	
		ADJ 1C	Toner density control reference value setting	25-2
ADJ 2	Adjusting high voltage values	ADJ 2A	Adjust the main charger grid voltage	8-2
		ADJ 2B	Adjust the developing bias voltage	8-1
		ADJ 2C	Transfer current and voltage adjustment	8-6
ADJ 8	Scan image focus adjustment			48-1

Note for the color balance/density check and adjustments

- For the color balance adjustments, be sure to use the paper specified for color (recommended paper).

  Note that, if another kind of paper is used for the color balance adjustment, proper image qualities (color balance, density) may not be obtained.
- When setting the adjustment pattern on the document table in the automatic color balance adjustment procedures, place 5 sheets of white paper on the adjustment pattern in order to prevent back copying and adverse effects of paper wrinkles as far as possible.

(2) Relationship between the servicing job contents and the color balance/density check and adjustment

Note that the jobs before and after execution of the color balance/density check and adjustment depend on the machine status and the servicing conditions.

Follow the flowchart of the color balance/density adjustment procedures depending on the actual conditions.

There are following four, major cases.

1) When installing (When a printer option is installed)
2) When a periodic maintenance is performed.
3) When a repair, an inspection, or a maintenance is performed. (When a consumable part is replaced.)
4) When an installation, a repair, or inspection is performed. (Without replacement of a consumable part)

(3) Copy color balance and density check

Important

Before checking the copy color balance and density, be sure to execute the following jobs.

* Execute the high density image correction (Process correction) forcibly. (SIM 44-6)
* Execute the half-tone image correction forcibly. (SIM 44-26)

Method 1

Make a copy of the gray test chart (UKOG-0162FCZZ) and a copy of the servicing color test chart (UKOG-0326FCZZ/UKOG-0326FC11), and check that they are proper.

a. Note for execution of the color balance and density check in the color copy mode

To check the copy color balance and density, use the gray test chart (UKOG-0162FCZZ) and the servicing color test chart (UKOG-0326FCZZ/UKOG-0326FC11). Set the copy density level to "3" in the Text/Printed Photo mode (Manual), and make a copy.

At that time, all the color balance adjustments in the user adjustment mode must be set to the default (center).

In addition, be sure to use the specified paper for color.

b. Note for checking the monochrome copy mode density

To check the density, use the gray test chart (UKOG-0162FCZZ). Set the copy density level to "Manual 3" in the Text/Printed Photo mode (Manual).

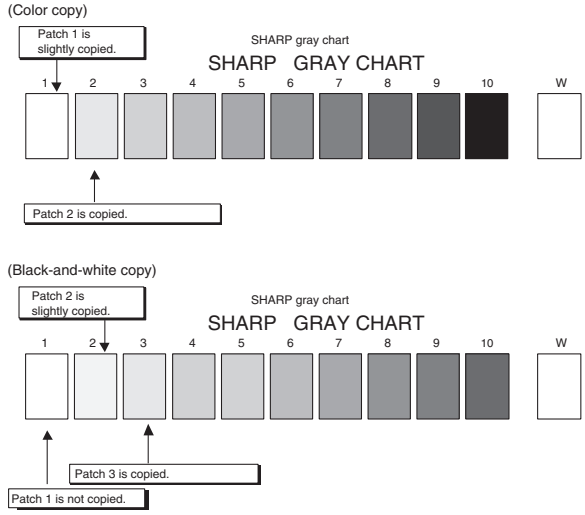
In addition, all the color balance adjustments in the user adjustment mode must be set to the default (center).

Check with the gray test chart (UKOG-0162FCZZ)

In the copy density check with the gray test chart, check to insure the following conditions.

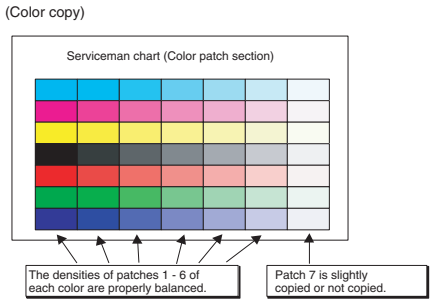
Important

For the color (gray) balance, use the servicing color test chart (UKOG-0326FCZZ/UKOG-0326FC11) to check.


(Color copy)
Patch 1 is slightly copied.
SHARP gray chart
SHARP GRAY CHART
1 2 3 4 5 6 7 8 9 10 W
Patch 2 is copied.
(Black-and-white copy)
Patch 2 is slightly copied.
SHARP gray chart
SHARP GRAY CHART
1 2 3 4 5 6 7 8 9 10 W
Patch 3 is copied.
Patch 1 is not copied.

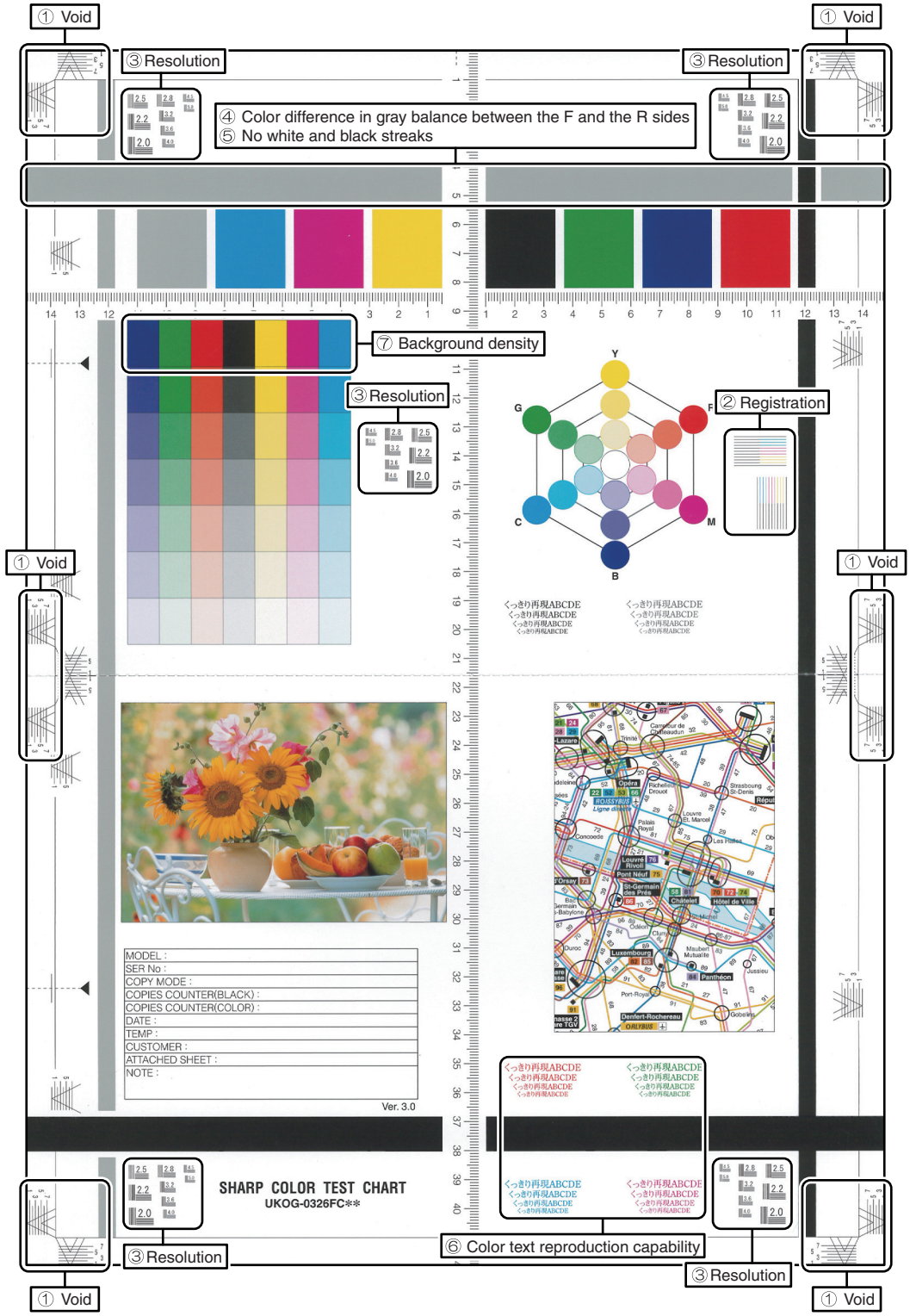
Check with the servicing color test chart (UKOG-0326FCZZ/UKOG-0326FC11)

In the copy color balance check with the servicing color test chart, check to insure the following conditions.


(Color copy)
Serviceman chart (Color patch section)
The densities of patches 1 - 6 of each color are properly balanced.
Patch 7 is slightly copied or not copied.

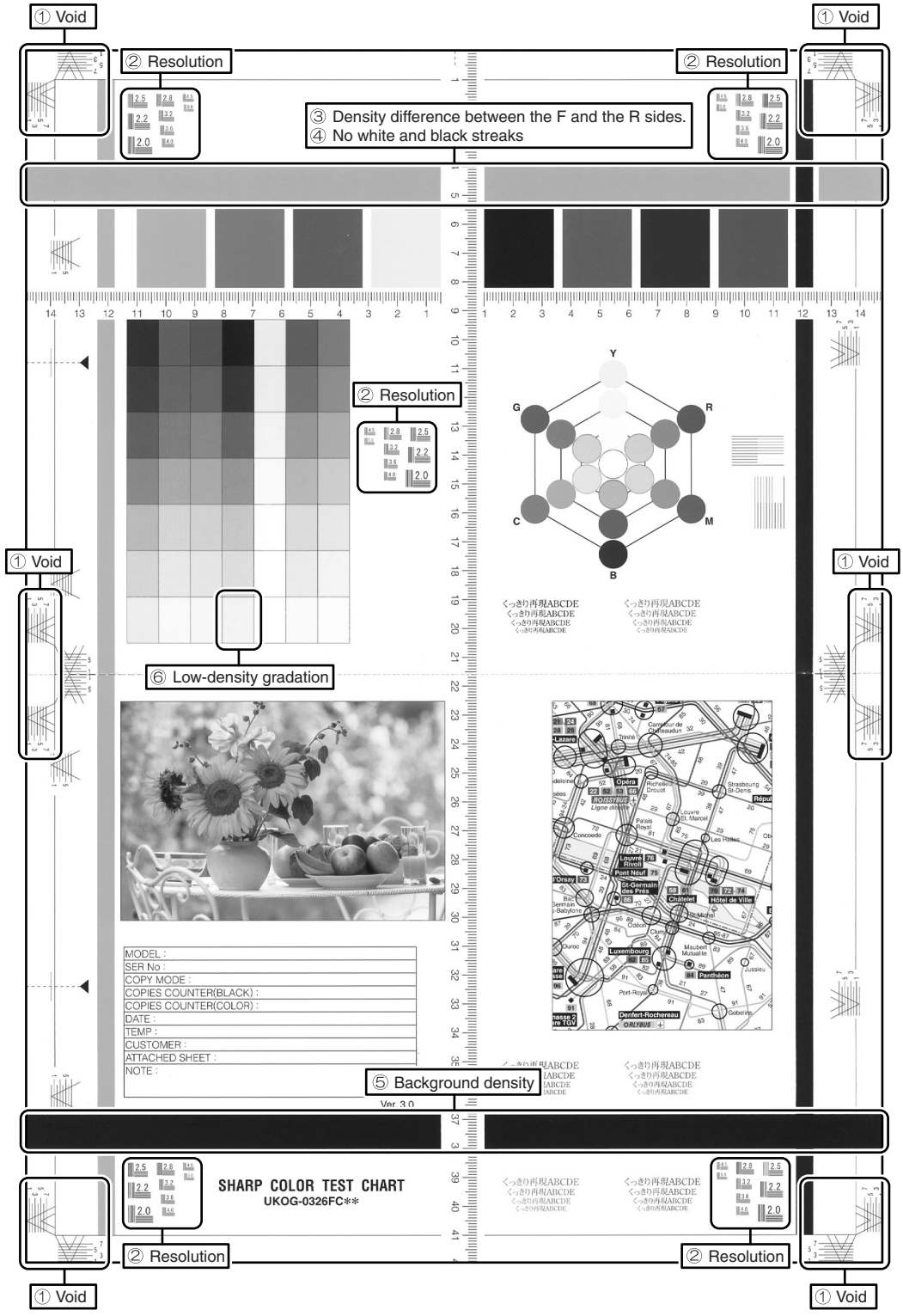
a. Color copy check items (Check to confirm the following:)

1) There are 12 void areas.
2) Registrations (one point for the main scanning, and one point for the sub scanning) are not shifted.
3) The resolution of 5.0 (5 points) can be seen.
4) The color difference in gray balance between the F and the R sides is not so great.
5) There are no white and black streaks.
6) Color texts are clearly reproduced.
7) The background density is not so light.



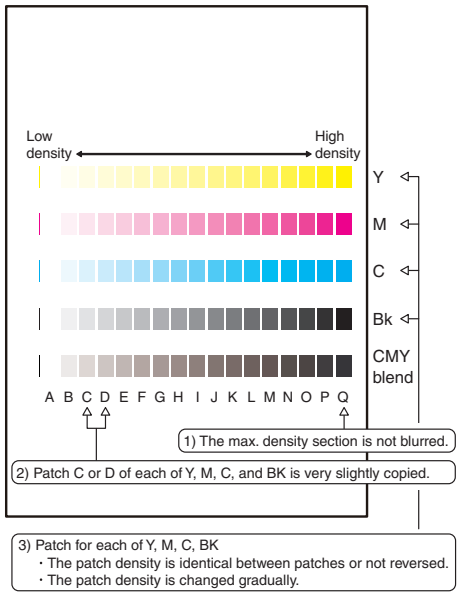
b. Monochrome copy check items (Check to confirm the following:)

1) There are 12 void areas.
2) The resolution of 4.0 (5 points) can be seen.
3) The density difference between the F and the R sides is not so great.
4) There are no white and black streaks.
5) The background density is not so light.
6) The black low-density gradation is copied slightly.



(Method 2)

Use SIM46-21 to print the color balance adjustment sheet, and check each process (CMY) black patch color balance and the black patch in order to confirm that the color balance adjustment is proper or not more precisely.


Low density
High density
Y
M
C
Bk
CMY blend
A B C D E F G H I J K L M N O P Q
1) The max. density section is not blurred.
2) Patch C or D of each of Y, M, C, and BK is very slightly copied.
3) Patch for each of Y, M, C, BK
・The patch density is identical between patches or not reversed.
・The patch density is changed gradually.

If the color balance of each patch of the process black (CMY mixed color) is slightly shifted to Magenta, it means that the adjustment is proper. If the color balance of the adjustment pattern printed in this mode is slightly shifted to Magenta, it is converted into the natural gray color balance by the color table in an actual copy mode. (When the color balance target is DEF 1.)

(4) Printer color balance/density check

Important

Before checking the copy color balance and the density, be sure to execute the following procedures in advance.

* Execute the high density image correction (Process correction) forcibly. (SIM 44-6)
* The half-tone image correction is forcibly executed. (SIM 44-26)

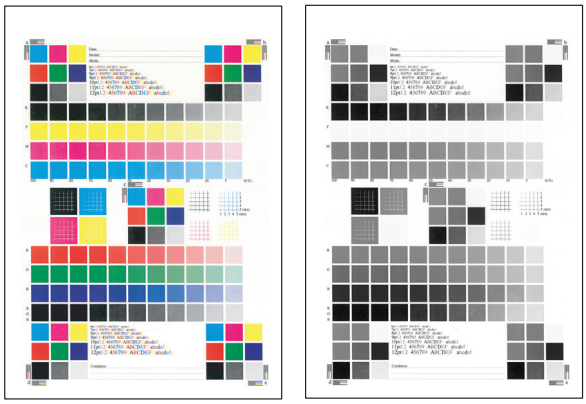
(Method 1)

Execute SIM 64-5 to print the print test pattern.

Important

When the PCL or the PS printer function is not provided (GDI model), this method cannot be used for check.

Set each set value to the default and press [EXECUTE] key. The print test pattern is printed.

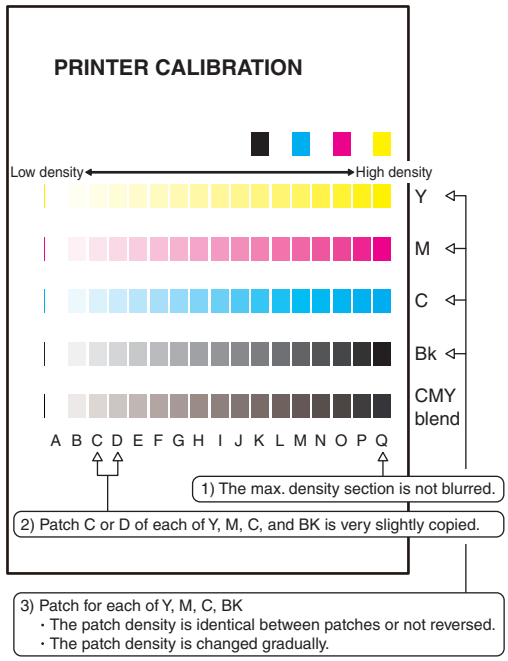


The print density must be changed gradually from the lighter level to the darker level. The density changing direction must not be reversed. The density level of each color must be almost at the same level.

(Method 2)

When the PCL or the PS printer function is not provided (GDI model), use this method for check.

Use SIM 67-25 to print the color balance adjustment sheet and compare each process (CMY) black patch color balance and the black patch to check the color balance.


PRINTER CALIBRATION
Low density
High density
Y
M
C
Bk
CMY blend
A B C D E F G H I J K L M N O P Q
1) The max. density section is not blurred.
2) Patch C or D of each of Y, M, C, and BK is very slightly copied.
3) Patch for each of Y, M, C, BK
・The patch density is identical between patches or not reversed.
・The patch density is changed gradually.

The print density must be changed gradually from the lighter level to the darker level. The density changing direction must not be reversed.

The density level of each color must be almost at the same level.

Patch B may not be copied.

Patch A must not be copied.

If the color balance of each patch of the process black (CMY mixed color) is slightly shifted to Magenta, it means that the adjustment is proper. In an actual print mode, it is converted into the natural gray color balance by the color table. (When the color balance target is DEF 1.)

10-A Scanner calibration (CCD calibration)

This adjustment must be performed in the following cases:

* When the CCD unit is replaced.
* When a U2 trouble is occurred.
* When the scanner control PWB is replaced.
* When the EEPROM on the scanner control PWB is replaced.

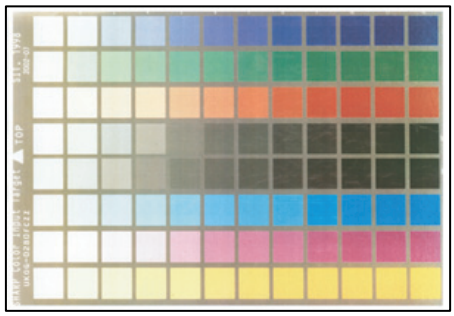
(1) Note before adjustment

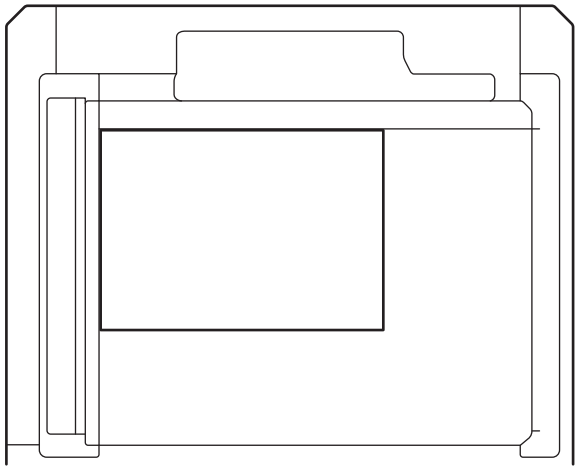
- Check that the table glass, No. 1, 2, 3 mirrors, and the lens surface are free from dirt and dust.
  (If there is some dust and dirt, wipe and clean with alcohol.)
- Check to confirm that the patches in BK1 and BK2 arrays of the SIT chart (UKOG-0280FCZZ or UKOG-0280FCZ1) are free from dirt and scratches.
  If they are dirty, clean them.
  If they are scratched or streaked, replace with new one.

(2) Adjustment procedures

1) Set the SIT chart (UKOG-0280FCZZ or UKOG-0280FCZ1) to the reference position on the left rear frame side of the document table.

Set the chart so that the lighter density side of the patch is on the left side.





If the SIT chart is not available, execute SIM 63-5 to set the CCD gamma to the default. In this case, however, the adjustment accuracy is lower when compared with the adjustment method using the SIT chart.

Important

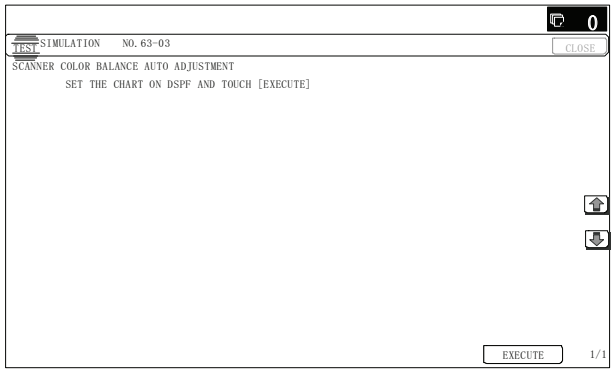
Check to insure that the SIT chart (UKOG-0280FCZZ or UKOG-0280FCZ1) is in close contact with the document table.

Note

UKOG-0280FCZZ is equivalent to UKOG-0280FCZ1.

2) Enter the SIM 63-3 mode and press [EXECUTE] key.

The automatic operation is started. During the adjustment, [EXECUTE] is highlighted. After completion of the adjustment, [EXECUTE] returns to the normal display.



Note

Since the SIT chart (UKOG-0280FCZZ or UKOG-0280FC Z1) is easily discolored by sunlight (especially ultraviolet rays) and humidity and temperature, put it in a bag (such as a dark file) and store in a dark place of low temperature and low humidity.

SET 1 Color balance adjustment target setup

a. General

When the automatic color balance adjustment is executed, a certain color balance (gamma) is used as the target.

There are following three kinds of the target.

- Factory color balance (gamma) target
- Service color balance (gamma) target
- User color balance (gamma) target

In the above three, only the service color balance target can be set to a desired level.

This setting is required in the following cases.

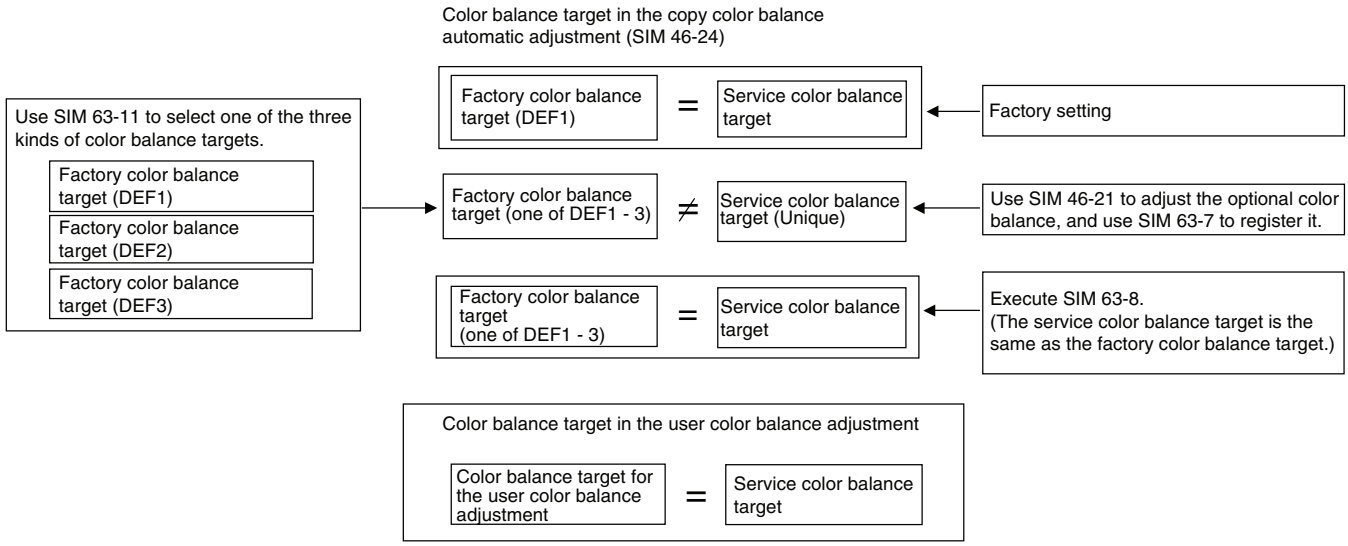
* When the color balance and density adjustments are executed manually (SIM46-21) (SIM67-25)
* U2 trouble has occurred.
* When the MFP PWB is replaced.
* When the EEPROM on the MFP PWB is replaced.
* The scanner control PWB has been replaced.
* The EEPROM on the scanner control PWB has been replaced.
* When the user requests for customizing the color balance.
* When the service color balance target gamma is judged as improper.

SET 1A Copy color balance adjustment target setup

- Each color balance target for the copy color balance adjustment

Type		Descriptions
A	Factory color balance (gamma) target	There are three kinds of the color balance target, and each of them is specified according to the machine design. Use SIM 63-11 to select one of them as the factory target. The default setting (factory setting) is the color balance (DEF1) which emphasizes color reproduction.
B	Service color balance (gamma) target	This target is used when the user requests to customize the color balance to user's desired level. In advance, the user's unique color balance must be registered as the service color balance target. The above registration (setting) is made by the serviceman with SIM 46-21 to adjust the color balance and with SIM 63-7 to register it. This color balance target is used when the user executes the color balance adjustment. When, therefore, the service color balance target is changed, the color balance target of the user's color balance adjustment is also changed. When, however, SIM 63-8 is executed, the color balance is set to the factory color balance target set with SIM 63-11. The default setting (factory setting) of the color balance is same as the factory color balance target. (Emphasized on color reproduction (DEF1)) If the user does not request for customizing the color balance, be sure to use SIM 63-8 to set the color balance to the factory color balance target.
C	User color balance (gamma) target	Same color balance as the service color balance (gamma) target When the service color balance target is changed, this color balance target is also changed accordingly.

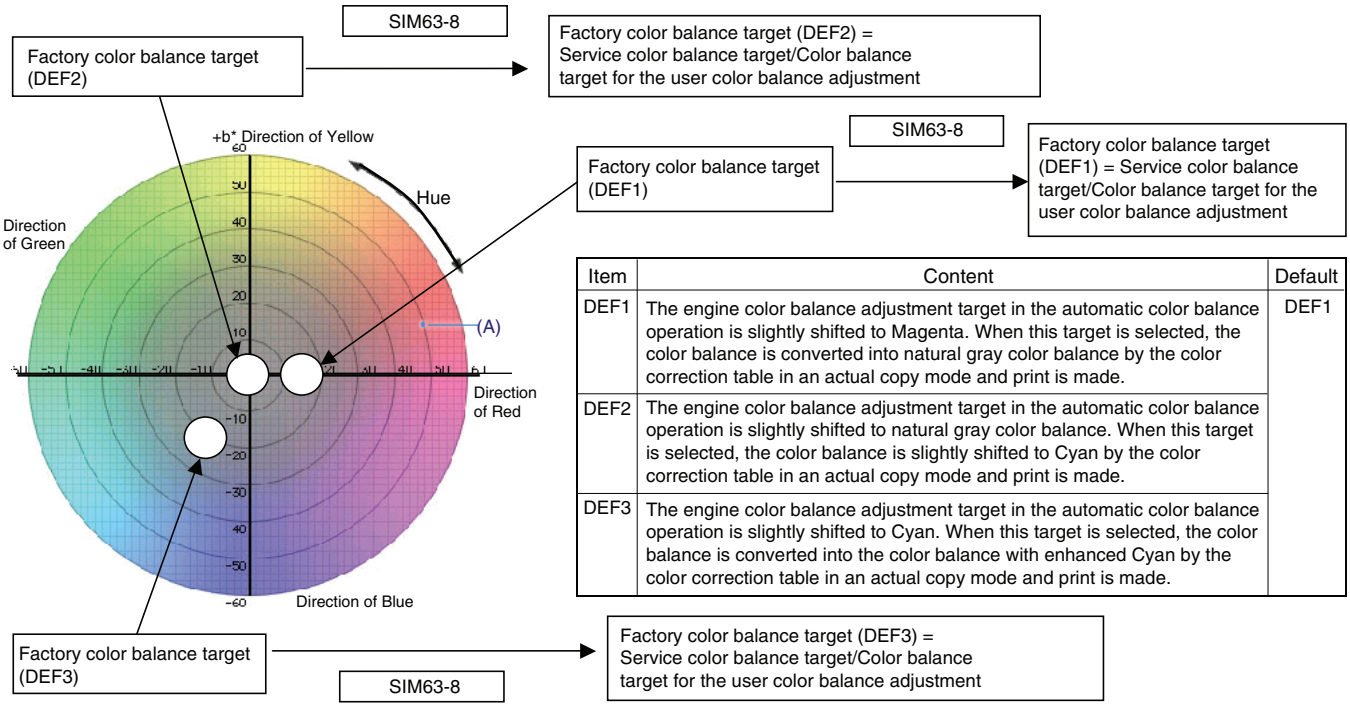
- Relationship between the factory target and the service target and the color balance target for the user color balance adjustment in the copy color balance adjustment (Automatic adjustment) (SIM 46-74/46-24)


Color balance target in the copy color balance automatic adjustment (SIM 46-24)
Use SIM 63-11 to select one of the three kinds of color balance targets.
Factory color balance target (DEF1)
Factory color balance target (DEF2)
Factory color balance target (DEF3)
Factory color balance target (DEF1)
=
Service color balance target
Factory setting
Factory color balance target (one of DEF1 - 3)
≠
Service color balance target (Unique)
Use SIM 46-21 to adjust the optional color balance, and use SIM 63-7 to register it.
Factory color balance target (one of DEF1 - 3)
=
Service color balance target
Execute SIM 63-8. (The service color balance target is the same as the factory color balance target.)
Color balance target in the user color balance adjustment
Color balance target for the user color balance adjustment
=
Service color balance target

- Factory target in the copy color balance adjustment (SIM 46-74/46-24)

  By use of SIM 63-11, one of the following color balances can be set as the factory color balance target.

  Each of the three color balances cannot be changed. (Fixed)


Factory color balance target (DEF2)
SIM63-8
Factory color balance target (DEF2) = Service color balance target/Color balance target for the user color balance adjustment
+b* Direction of Yellow
Hue
Direction of Green
Direction of Red
Direction of Blue
(A)
Factory color balance target (DEF1)
SIM63-8
Factory color balance target (DEF1) = Service color balance target/Color balance target for the user color balance adjustment
Factory color balance target (DEF3)
SIM63-8
Factory color balance target (DEF3) = Service color balance target/Color balance target for the user color balance adjustment

Item	Content	Default
DEF1	The engine color balance adjustment target in the automatic color balance operation is slightly shifted to Magenta. When this target is selected, the color balance is converted into natural gray color balance by the color correction table in an actual copy mode and print is made.	DEF1
DEF2	The engine color balance adjustment target in the automatic color balance operation is slightly shifted to natural gray color balance. When this target is selected, the color balance is slightly shifted to Cyan by the color correction table in an actual copy mode and print is made.	
DEF3	The engine color balance adjustment target in the automatic color balance operation is slightly shifted to Cyan. When this target is selected, the color balance is converted into the color balance with enhanced Cyan by the color correction table in an actual copy mode and print is made.	

- Service color balance target in the copy color balance adjustment ((Automatic adjustment) SIM 46-74/46-24).

  For the service color balance target, an optional color balance can be adjusted with SIM 46-21 and registered with SIM 63-7. When, however, SIM 63-8 is executed, the color balance is set to the same balance as the factory color balance target set with SIM 63-11.

- Color balance target in the user color balance adjustment

  This color balance is same as the service color balance target in the copy color balance adjustment (Automatic adjustment) (SIM 46-74/46-24). When, therefore, the service color balance target is changed, this target is also changed accordingly.

(Meaning of the service color balance target gamma data and the purpose of registration)

This procedure must be executed only when the color balance is customized with SIM 46-21.

If the color balance is not customized, this procedure is not required.

After completion of the customized color balance adjustment (Manual) with SIM 46-21 according to the user's request, use SIM 63-7 to register the service color balance target data by using adjustment pattern that was printed in this mode.

Important

In this case, be sure to use A4 or 11" x 8.5" paper for printing the adjustment pattern by SIM 46-21.

By this procedure, the service color balance target is revised.

It is recommended to keep the printed adjustment pattern created with SIM 46-21. This adjustment pattern can be used to register the same color balance target to another machine.

It is also useful to register the service color balance target data.
Do not fold it and keep it under the circumstances which protect it from discoloration and dirt.

The service color balance target data is registered immediately after the color balance adjustment (Manual) with SIM 46-21.

If a considerable time has passed after completion of the color balance adjustment (Manual) with SIM 46-21, the color balance of the adjustment pattern at the time of adjustment differs from the color balance of the adjustment pattern printed after a considerable time. Never use such a pattern for the adjustment.

The accuracy of the service color balance target data can be judges as follows.

When result of the color valance adjustment (Auto) with selecting the service color balance target in SIM 46-74/46-24 is unsatisfactory or abnormal.

In that case, the registered service target data for the color balance adjustment (Auto) may be improper.

This may be caused when an improper or abnormal color balance adjustment pattern was used to register the service color balance target data for the color balance adjustment with SIM 63-7.

The color balance adjustment pattern used in registration was made and printed by the color balance adjustment (Manual) with SIM 46-21. This procedure may have been executed erroneously

a. Setting procedure

(Setting procedure of an optional color balance (gamma) as the service color balance target)

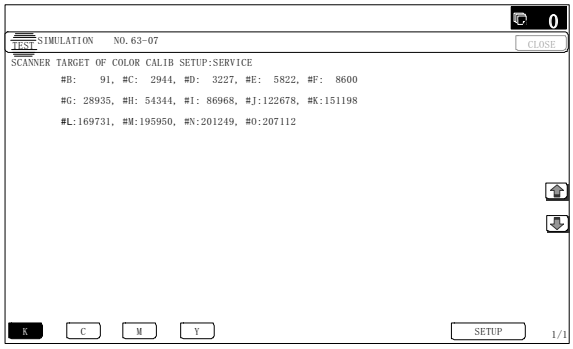
1) Use SIM 46-21 (Copy color balance adjustment (manual adjustment) mode) to print two sheets of the color patch image (adjustment pattern).

   Important

   In this case, be sure to use A4 or 11" x 8.5" paper for printing the adjustment pattern by SIM 46-21.

   If the color balance is shifted from the standard, an adjustment is required. If not, an adjustment is not required. When an optional color balance is requested by the user, make an adjustment.

2) Enter the SIM 63-7 mode.



3) Press [SETUP] key.

4) Set the color patch image (adjustment pattern) correctly adjusted and printed in the copy color balance adjustment (Manual adjustment) (SIM 46-21) (ADJ 10C (2)) on the document table.

   The color patch image (adjustment pattern) printed with SIM 64-7 can be used instead. In this case, however, check that the printed pattern is normal.

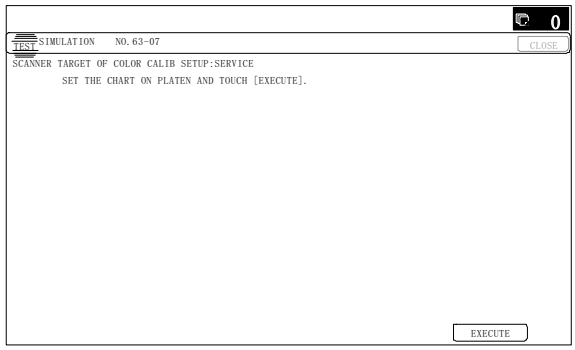
   (When the color patch image (adjustment pattern) is printed by SIM 64-7, set the item B (PROC ADJ) to "0 (YES)" and press [EXECUTE] key to print.)

   A color patch image (adjustment pattern) printed by another machine can be used.

   Set the pattern so that the light density side is on the left side. Place 5 sheets of white paper on the color patch image (adjustment pattern).

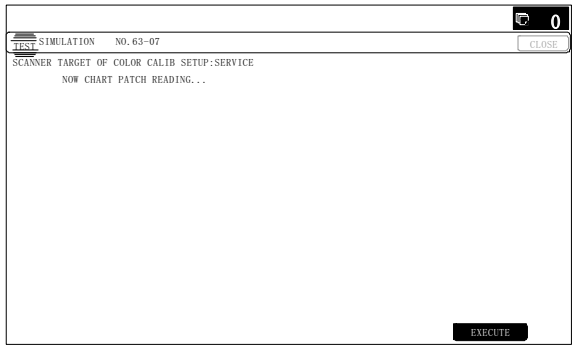
   If the color balance could not be adjusted satisfactorily with SIM 46-21 (Color balance adjustment (Manual)), do not execute SIM 63-7 to register the service color balance target data.

5) Press [EXECUTE] key.



   The color patch image (adjustment pattern) is read.

6) Press [REPEAT] key, set the second color patch image (adjustment pattern), and execute the procedure 5) again.



   The color balance (gamma) target set level of each color (KCMY) can be checked with K/C/M/Y keys.

   Check that the set level is increased in the sequence of B - Q (MAX). If there is no variation or variation is reversed, it is judged as abnormal.

   In case of an abnormality, repair the problem and try again.

7) Press [OK] key.

   The color balance (gamma) of the color patch image (adjustment pattern) used in the procedure 5) is set as the service target.

(Procedures to set the service color balance target and the color balance target for the user color balance adjustment to the same color balance as the factory color balance target)

Important

This procedure must not be executed when the copy color balance was adjusted with SIM 46-21 to a unique color balance requested by the user and it was registered as the service color balance target with SIM 63-7.

When the factory color balance target is changed with SIM 63-11, be sure to execute this procedure.

1) Enter the SIM 63-8 mode.

2) Press [EXECUTE] key.

3) Press [YES] key.

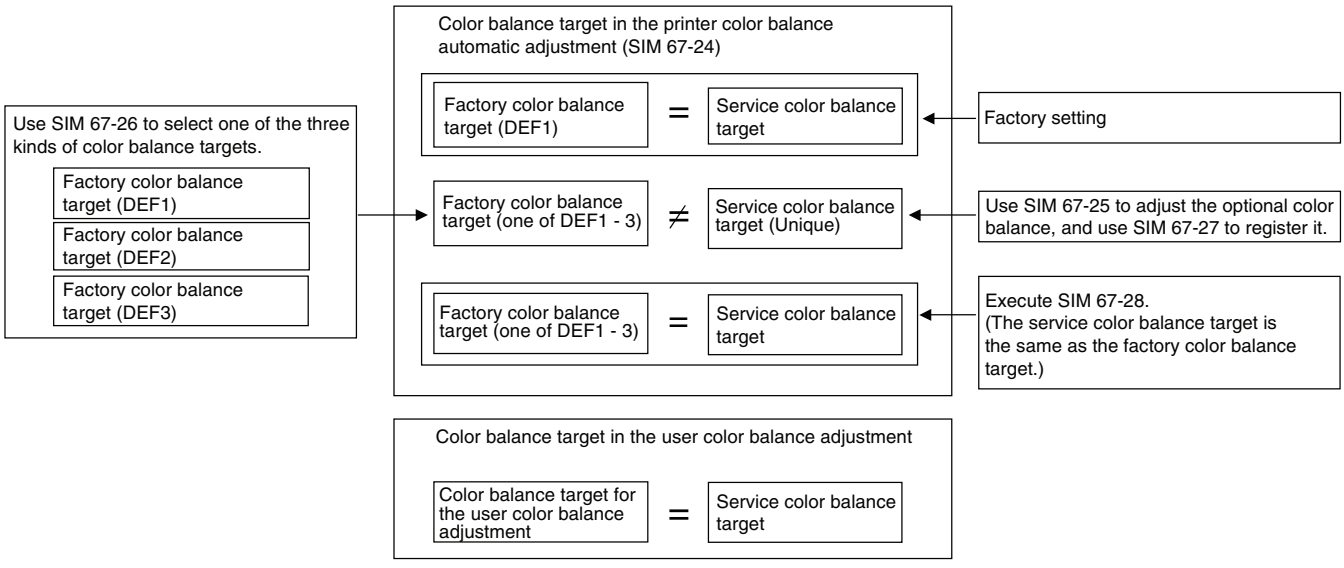
The service color balance target and the color balance target for the user color balance adjustment are set to the same color balance as the factory color balance target.

SET 1B Printer color balance adjustment target setup

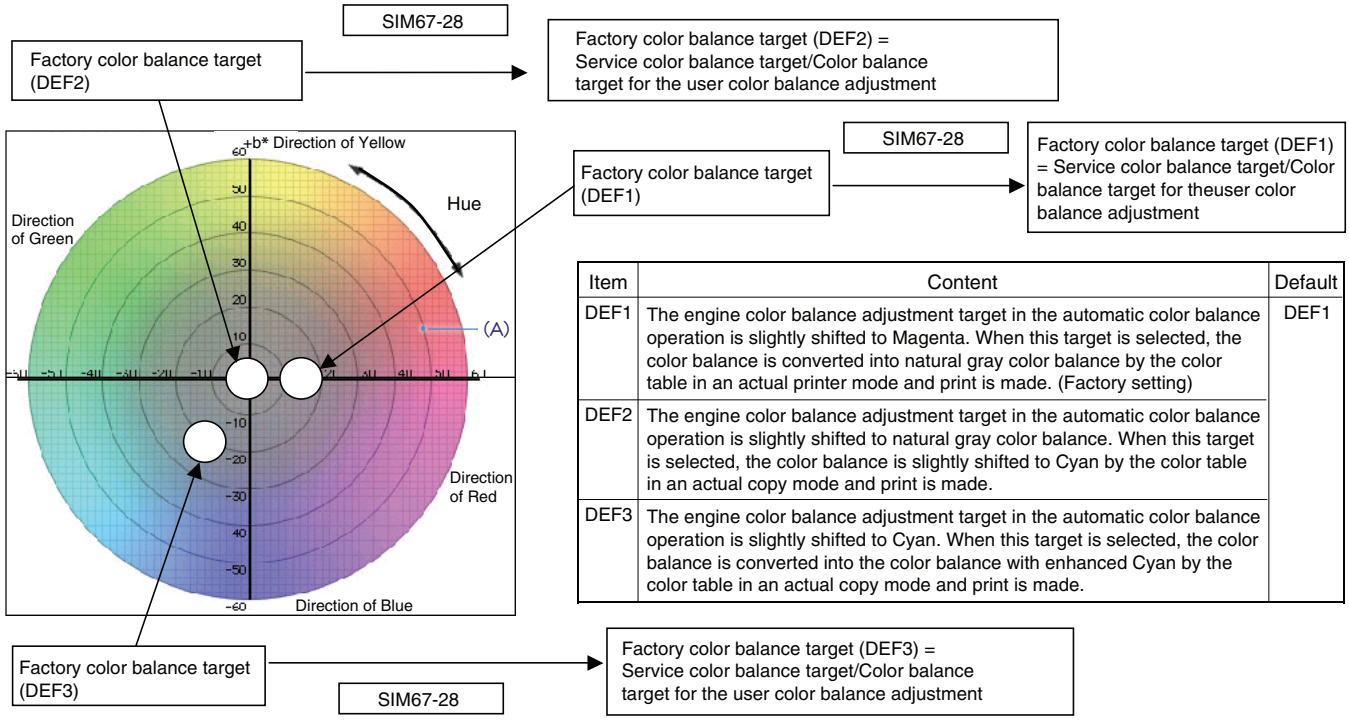
- Color balance target for the printer color balance adjustment

Type		Descriptions
A	Factory color balance (gamma) target	There are three kinds of the color balance targets, and each of them is specified according to the machine design. Use SIM 67-26 to select one of them as the factory target. The default setting (factory setting) is the color balance (DEF1) which emphasizes color reproduction.
B	Service color balance (gamma) target	This target is used when the user requests to customize the color balance to user's desired level. In advance, the user's unique color balance must be registered as the service color balance target. The above registration (setting) is made by the serviceman with SIM 67-25 to adjust the color balance and with SIM 67-27 to register it. This color balance target is used when the user executes the color balance adjustment. When, therefore, the service color balance target is changed, the color balance target of the user's color balance adjustment is also changed. When, however, SIM 67-28 is executed, the color balance is set to the factory color balance target set with SIM 67-26. The default setting (factory setting) of the color balance is same as the factory color balance target. (Emphasized on color reproduction (DEF1)) If the user does not request for customizing the color balance, be sure to use SIM 67-28 to set the color balance to the factory color balance target.
C	User color balance (gamma) target	Same color balance as the service color balance (gamma) target When the service color balance target is changed, this color balance target is also changed accordingly.

- Relationship between the factory target and the service target and the color balance target for the user color balance adjustment in the printer color balance adjustment (Automatic adjustment) (SIM 46-74/76-24)


Use SIM 67-26 to select one of the three kinds of color balance targets.
Factory color balance target (DEF1)
Factory color balance target (DEF2)
Factory color balance target (DEF3)
Color balance target in the printer color balance automatic adjustment (SIM 67-24)
Factory color balance target (DEF1)
=
Service color balance target
Factory setting
Factory color balance target (one of DEF1 - 3)
≠
Service color balance target (Unique)
Use SIM 67-25 to adjust the optional color balance, and use SIM 67-27 to register it.
Factory color balance target (one of DEF1 - 3)
=
Service color balance target
Execute SIM 67-28.
(The service color balance target is the same as the factory color balance target.)
Color balance target in the user color balance adjustment
Color balance target for the user color balance adjustment
=
Service color balance target

- Factory target in the printer color balance adjustment (Automatic adjustment) (SIM 46-74/67-24)
  By use of SIM 67-26, one of the following color balances can be set as the factory color balance target.
  Each of the three color balances cannot be changed. (Fixed)


SIM67-28
Factory color balance target (DEF2)
Factory color balance target (DEF2) = Service color balance target/Color balance target for the user color balance adjustment
+b* Direction of Yellow
Hue
Direction of Green
Direction of Red
Direction of Blue
(A)
SIM67-28
Factory color balance target (DEF1)
Factory color balance target (DEF1) = Service color balance target/Color balance target for theuser color balance adjustment
Factory color balance target (DEF3)
SIM67-28
Factory color balance target (DEF3) = Service color balance target/Color balance target for the user color balance adjustment

Item	Content	Default
DEF1	The engine color balance adjustment target in the automatic color balance operation is slightly shifted to Magenta. When this target is selected, the color balance is converted into natural gray color balance by the color table in an actual printer mode and print is made. (Factory setting)	DEF1
DEF2	The engine color balance adjustment target in the automatic color balance operation is slightly shifted to natural gray color balance. When this target is selected, the color balance is slightly shifted to Cyan by the color table in an actual copy mode and print is made.	
DEF3	The engine color balance adjustment target in the automatic color balance operation is slightly shifted to Cyan. When this target is selected, the color balance is converted into the color balance with enhanced Cyan by the color table in an actual copy mode and print is made.	

- Service color balance target in the printer color balance adjustment (Automatic adjustment) (SIM 46-74/67-24).
  For the service color balance target, an optional color balance can be adjusted with SIM 67-25 and registered with SIM 67-27. When, however, SIM 67-28 is executed, the color balance is set to the same balance as the factory color balance target set with SIM 67-26.
- Color balance target in the user color balance adjustment
  This color balance is same as the service color balance target in the printer color balance adjustment (Automatic adjustment) (SIM 46-74/67-24). When, therefore, the service color balance target is changed, this target is also changed accordingly.

(Meaning of the service color balance target gamma data and the purpose of registration)

This procedure must be executed only when the color balance is customized with SIM 67-25.

If the color balance is not customized, this procedure is not required.

After completion of the customized color balance adjustment (Manual) with SIM 67-25 according to the user's request, use SIM 67-27 to register the service color balance target data by use of the printed adjustment pattern.

Important

In this case, be sure to use A4 or 11" x 8.5" paper for printing the adjustment pattern by SIM 67-25.

By this procedure, the service color balance target is revised.

It is recommended to keep the printed adjustment pattern created with SIM 67-25. This adjustment pattern can be used to register the same color balance target to another machine.

It is also useful to register the service color balance target data. Do not fold it and keep it under the circumstances which protect it from discoloration and dirt.

The service color balance target data is basically registered immediately after the color balance adjustment (Manual) with SIM 67-25.

If a considerable time has passed after completion of the color balance adjustment (Manual) with SIM 67-25, the color balance of the adjustment pattern at the time of adjustment differs from the color balance of the adjustment pattern printed after a considerable time. Never use such a pattern for the adjustment.

The correctness of the service color balance target data can be judged as follows.

When result of the color valance adjustment (Auto) with selecting the service color balance target in SIM 67-24 is unsatisfactory or abnormal.

In that case, the registered service target data for the color balance adjustment (Auto) may be improper.

This may be caused when an improper or abnormal color balance adjustment pattern was used to register the service color balance target data for the color balance adjustment with SIM 67-27.

The color balance adjustment pattern used in registration was made and printed by the color balance adjustment (Manual) with SIM 67-25. This procedure may have been executed erroneously.

a. Setting procedure

(Setting procedure of an optional color balance (gamma) as the service color balance target)

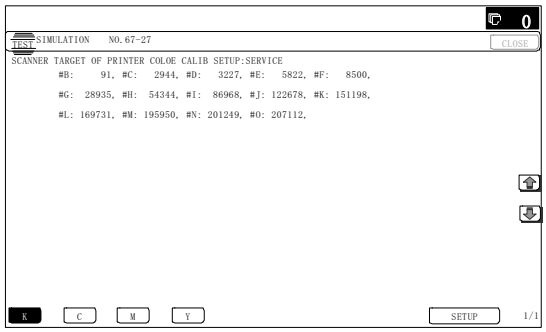
1) Use SIM 67-25 (Printer color balance adjustment (manual adjustment) mode) to print two sheets of the color patch image (adjustment pattern).

   Important

   In this case, be sure to use A4 or 11" x 8.5" paper for printing the adjustment pattern by SIM 67-25.

   If the color balance is shifted from the standard, an adjustment is required. If not, an adjustment is not required. When an optional color balance is requested by the user, make an adjustment.

2) Enter the SIM 67-27 mode.



3) Press [SETUP] key.

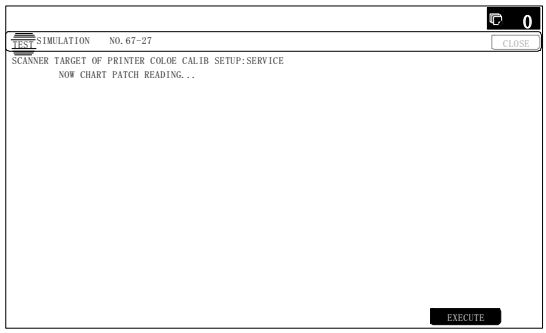
4) Set the color patch image (adjustment pattern) correctly adjusted and printed in the printer color balance adjustment (Manual adjustment) (SIM 67-25) (ADJ 10E (2)) on the document table.

A color patch image (adjustment pattern) printed by another machine can be used.

Set the pattern so that the light density side is on the left side. Place 5 sheets of white paper on the color patch image (adjustment pattern).

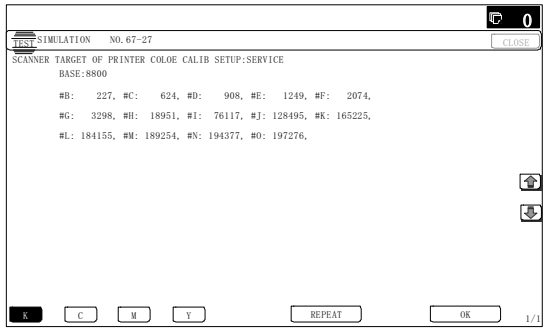
This procedure must not be executed when the copy color balance (manual) was adjusted with SIM 67-25 to a unique color balance requested by the user and it was registered as the service color balance target with SIM 67-27.

5) Press [EXECUTE] key.



The color patch image (adjustment pattern) is read.

6) Press [REPEAT] key, set the second color patch image (adjustment pattern), and execute the procedure 5) again.



The color balance (gamma) target set level of each color (K, C, M and Y) can be checked with K/C/M/Y keys.

Check that the set level is increased in the sequence of B - Q (MAX). If there is no variation or variation is reversed, it is judged as abnormal.

In case of an abnormality, repair the problem and try again.

7) Press [OK] key.

The color balance (gamma) of the color patch image (adjustment pattern) used in the procedure 5) is set as the service target.

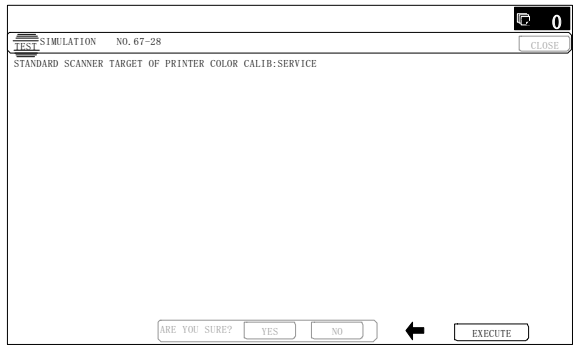
(Procedures to set the service color balance target and the color balance target for the user color balance adjustment to the same color balance as the factory color balance target)

Important

This procedure must not be executed when the copy color balance was adjusted with SIM 67-25 to a unique color balance requested by the user and it was registered as the service color balance target with SIM 67-27.

When the factory color balance target is changed with SIM 67-26, be sure to execute this procedure.

1) Enter the SIM 67-28 mode.



2) Press [EXECUTE] key.

3) Press [YES] key.

The service color balance target and the color balance target for the user color balance adjustment are set to the same color balance as the factory color balance target.

10-B Copy/Printer color balance and density adjustment (Automatic adjustment) (Basic adjustment)

This adjustment must be performed in the following cases:

* When a consumable part (developer, OPC drum, transfer belt) is replaced.
* When the CCD unit is replaced.
* When the scanner (reading) section is disassembled.
* When the scanner (reading) unit is replaced.
* U2 trouble has occurred.
* When the MFP PWB is replaced.
* When the EEPROM on the MFP PWB is replaced.
* The scanner control PWB has been replaced.
* The EEPROM on the scanner control PWB has been replaced.

a. General

SIM46-74 is used to perform the automatic copy color balance and density adjustment (SIM46-24) and the automatic printer color balance and density adjustment (SIM67-24) continuously.

Since it is desirable to perform the copy color balance adjustment (automatic adjustment) before the automatic printer color balance and density adjustment, it is advisable to perform the adjustment in this mode.

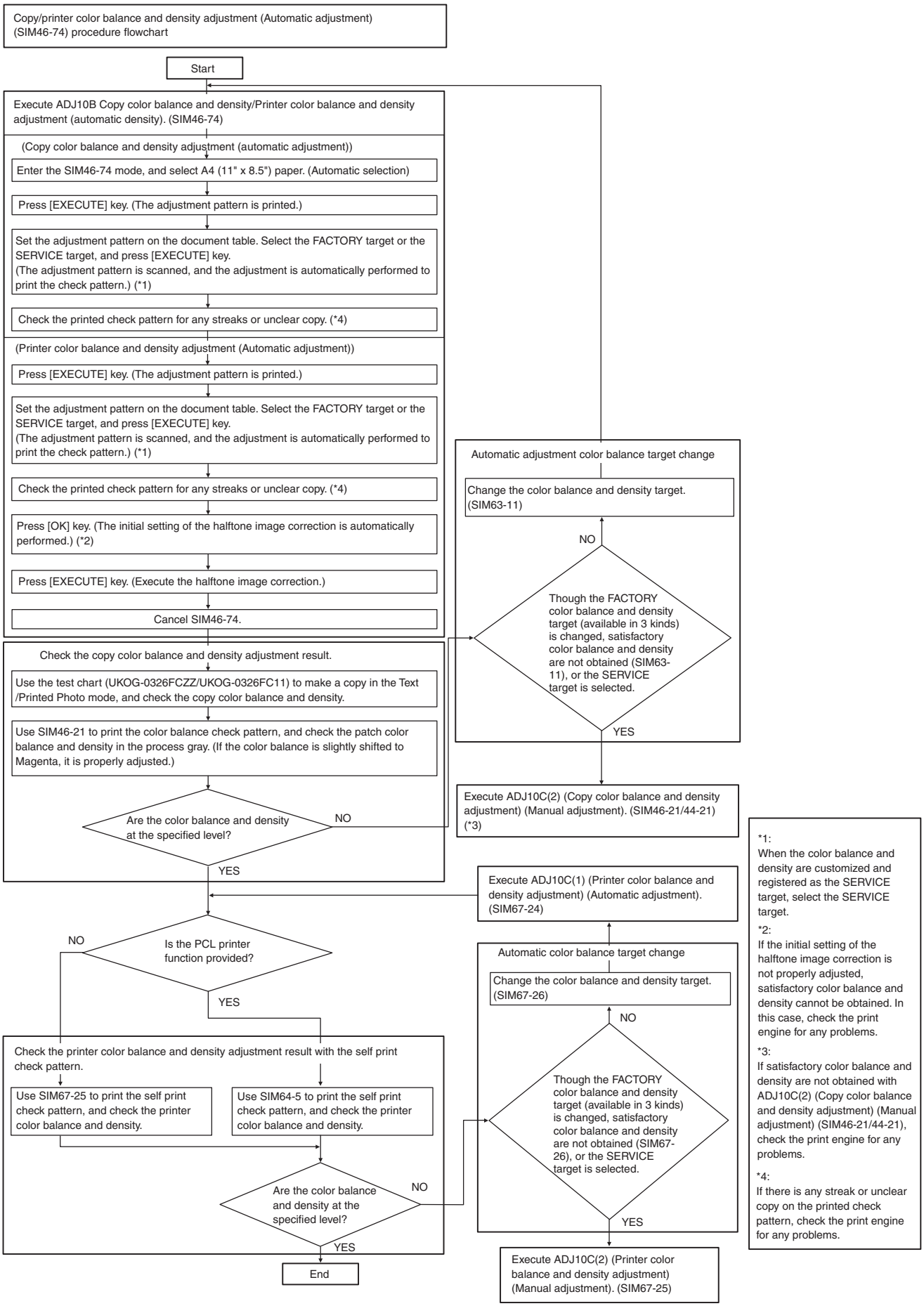
This mode is also advisable to effectively perform both of the automatic copy color balance and density adjustment (SIM46-24) and the automatic printer color balance and density adjustment (SIM67-24). It saves considerable time when compared with performing each of the auto copy/printer color balance and the density adjustment individually.

The color balance adjustment (automatic adjustment) is used to adjust the copy density of each of Cyan, Magenta, Yellow, and Black automatically.

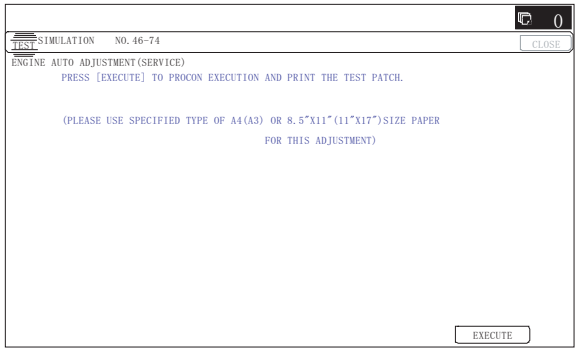
When this adjustment is executed, the color balance adjustments of all the copy/printer modes are revised.

b. Adjustment procedures

(Auto color balance adjustment by the serviceman)

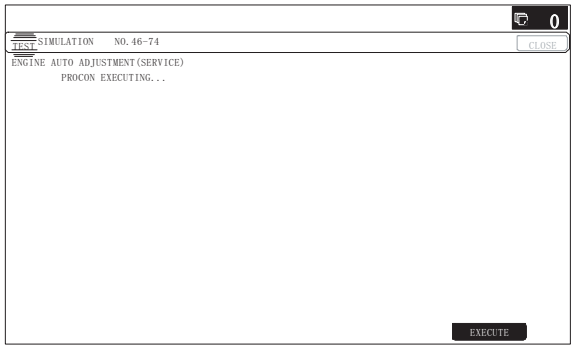

Copy/printer color balance and density adjustment (Automatic adjustment) (SIM46-74) procedure flowchart
Start
Execute ADJ10B Copy color balance and density/Printer color balance and density adjustment (automatic density). (SIM46-74)
(Copy color balance and density adjustment (automatic adjustment))
Enter the SIM46-74 mode, and select A4 (11" x 8.5") paper. (Automatic selection)
Press [EXECUTE] key. (The adjustment pattern is printed.)
Set the adjustment pattern on the document table. Select the FACTORY target or the SERVICE target, and press [EXECUTE] key.
(The adjustment pattern is scanned, and the adjustment is automatically performed to print the check pattern.) (*1)
Check the printed check pattern for any streaks or unclear copy. (*4)
(Printer color balance and density adjustment (Automatic adjustment))
Press [EXECUTE] key. (The adjustment pattern is printed.)
Set the adjustment pattern on the document table. Select the FACTORY target or the SERVICE target, and press [EXECUTE] key.
(The adjustment pattern is scanned, and the adjustment is automatically performed to print the check pattern.) (*1)
Check the printed check pattern for any streaks or unclear copy. (*4)
Press [OK] key. (The initial setting of the halftone image correction is automatically performed.) (*2)
Press [EXECUTE] key. (Execute the halftone image correction.)
Cancel SIM46-74.
Check the copy color balance and density adjustment result.
Use the test chart (UKOG-0326FCZZ/UKOG-0326FC11) to make a copy in the Text /Printed Photo mode, and check the copy color balance and density.
Use SIM46-21 to print the color balance check pattern, and check the patch color balance and density in the process gray. (If the color balance is slightly shifted to Magenta, it is properly adjusted.)
Are the color balance and density at the specified level?
NO
YES
Automatic adjustment color balance target change
Change the color balance and density target. (SIM63-11)
NO
Though the FACTORY color balance and density target (available in 3 kinds) is changed, satisfactory color balance and density are not obtained (SIM63-11), or the SERVICE target is selected.
YES
Execute ADJ10C(2) (Copy color balance and density adjustment) (Manual adjustment). (SIM46-21/44-21) (*3)
Execute ADJ10C(1) (Printer color balance and density adjustment) (Automatic adjustment). (SIM67-24)
Is the PCL printer function provided?
NO
YES
Automatic color balance target change
Change the color balance and density target. (SIM67-26)
NO
Though the FACTORY color balance and density target (available in 3 kinds) is changed, satisfactory color balance and density are not obtained (SIM67-26), or the SERVICE target is selected.
YES
Execute ADJ10C(2) (Printer color balance and density adjustment) (Manual adjustment). (SIM67-25)
Check the printer color balance and density adjustment result with the self print check pattern.
Use SIM67-25 to print the self print check pattern, and check the printer color balance and density.
Use SIM64-5 to print the self print check pattern, and check the printer color balance and density.
Are the color balance and density at the specified level?
NO
YES
End
*1: When the color balance and density are customized and registered as the SERVICE target, select the SERVICE target.
*2: If the initial setting of the halftone image correction is not properly adjusted, satisfactory color balance and density cannot be obtained. In this case, check the print engine for any problems.
*3: If satisfactory color balance and density are not obtained with ADJ10C(2) (Copy color balance and density adjustment) (Manual adjustment) (SIM46-21/44-21), check the print engine for any problems.
*4: If there is any streak or unclear copy on the printed check pattern, check the print engine for any problems.

1) Enter the SIM46-74 mode.


SIMULATION NO. 46-74
CLOSE
ENGINE AUTO ADJUSTMENT(SERVICE)
PRESS [EXECUTE] TO PROCON EXECUTION AND PRINT THE TEST PATCH.
(PLEASE USE SPECIFIED TYPE OF A4(A3) OR 8.5"X11"(11"X17")SIZE PAPER
FOR THIS ADJUSTMENT)
EXECUTE

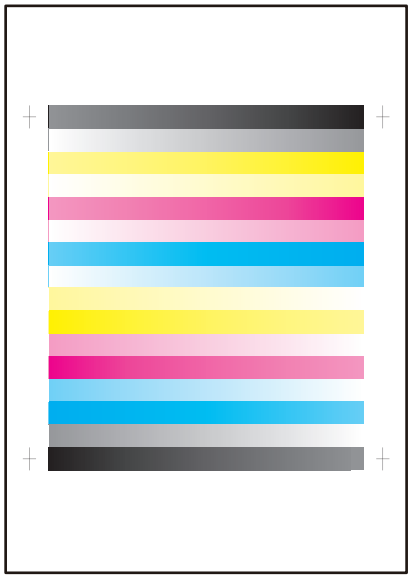
2) Press [EXECUTE] key.

The high density process control is performed, and the copy color patch image (adjustment pattern) is printed out. (A4/11" x 8.5" or A3/11" x 17" paper is automatically selected.)



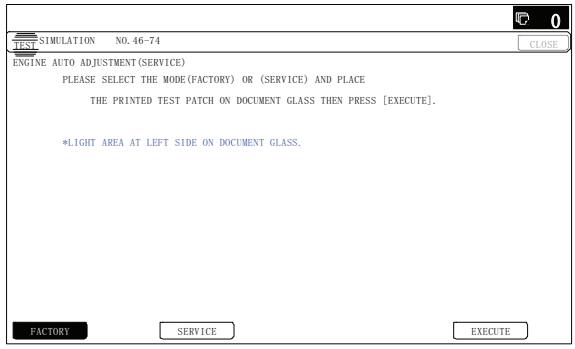
3) Set the color patch image (adjustment pattern) paper printed in procedure 2) on the document table.

Set the color patch image (adjustment pattern) printed in the procedure 2) on the document table. Place the color patch image so that the fine lines are on the left side. At that time, place 5 sheets of white paper on the printed color patch image (adjustment pattern).



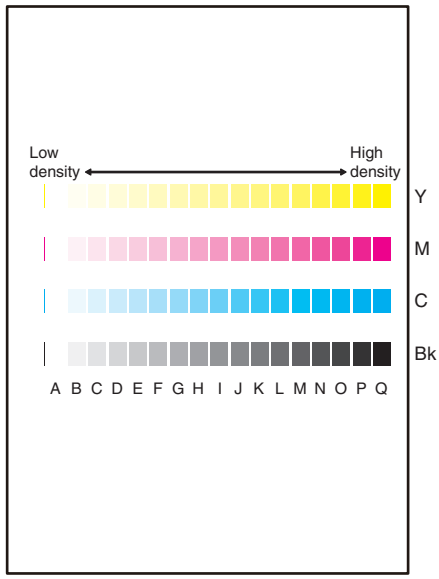
4) Select [FACTORY] target, and press [EXECUTE] key.

When the color balance is customized by the manual color balance adjustment (SIM 46-21) according to the user's request, and the color balance is registered with SIM63-7 as the service target, if the color balance is required to be adjusted, select the [SERVICE] target.


SIMULATION NO. 46-74
CLOSE
ENGINE AUTO ADJUSTMENT(SERVICE)
PLEASE SELECT THE MODE(FACTORY) OR (SERVICE) AND PLACE
THE PRINTED TEST PATCH ON DOCUMENT GLASS THEN PRESS [EXECUTE].
*LIGHT AREA AT LEFT SIDE ON DOCUMENT GLASS.
FACTORY
SERVICE
EXECUTE

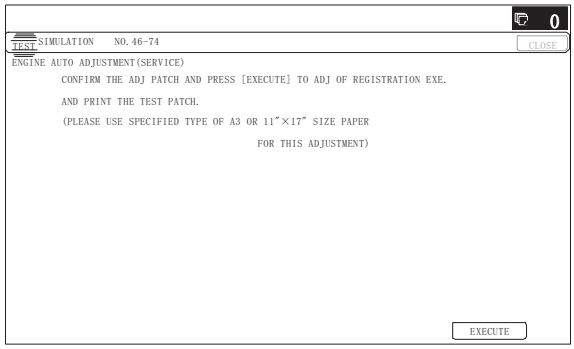
The copy color balance adjustment is automatically executed and prints the color balance check patch image.

If there is any streak or unclear print on the printed check pattern, check the print engine for any problems.



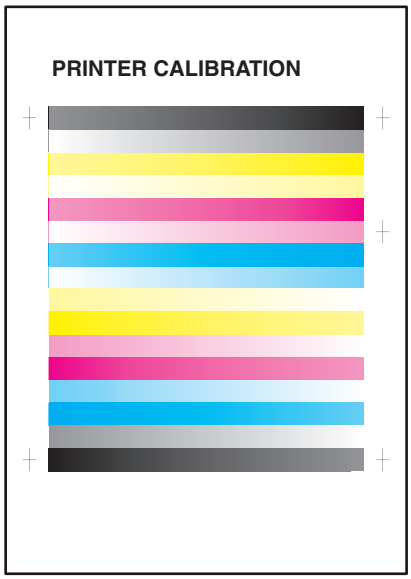
5) Press [EXECUTE] key.

The printer color patch image (adjustment pattern) is printed out. (A4/11" x 8.5" or A3/11" x 17" paper is automatically selected.)


SIMULATION NO. 46-74
CLOSE
ENGINE AUTO ADJUSTMENT(SERVICE)
CONFIRM THE ADJ PATCH AND PRESS [EXECUTE] TO ADJ OF REGISTRATION EXE.
AND PRINT THE TEST PATCH.
(PLEASE USE SPECIFIED TYPE OF A3 OR 11"×17" SIZE PAPER
FOR THIS ADJUSTMENT)
EXECUTE

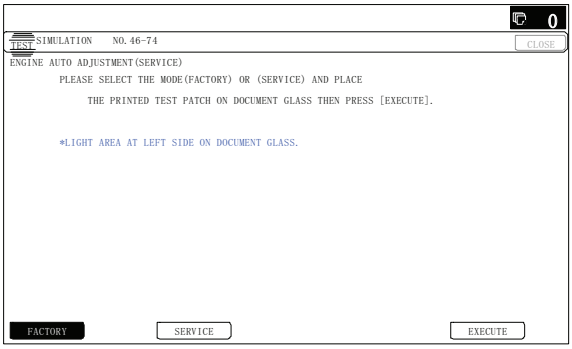
6) Set the color patch image (adjustment pattern) printed in the procedure 5) on the document table.

Set the color patch image (adjustment pattern) printed in the procedure 2) on the document table. Place the color patch image so that the fine lines are on the left side. At that time, place 5 sheets of white paper on the printed color patch image (adjustment pattern).



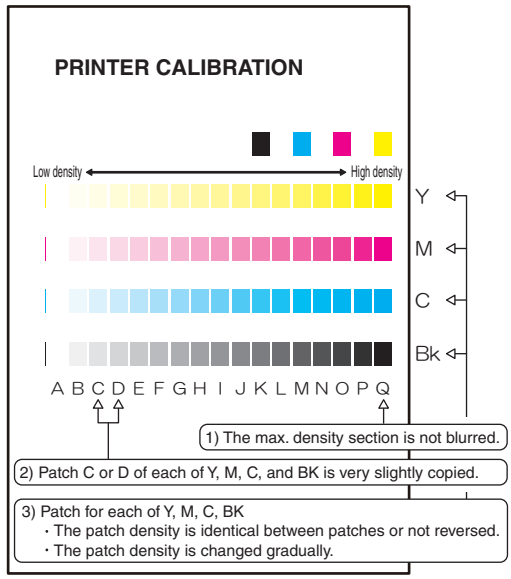
7) Select [FACTORY] target, and press [EXECUTE] key.

When the color balance is customized with the manual color balance adjustment (SIM 67-25) according to the user's request and the color balance is registered as the service target with SIM 67-27, if the color balance is adjusted to that color balance, select the [SERVICE] target.


SIMULATION NO. 46-74
CLOSE
ENGINE AUTO ADJUSTMENT(SERVICE)
PLEASE SELECT THE MODE(FACTORY) OR (SERVICE) AND PLACE
THE PRINTED TEST PATCH ON DOCUMENT GLASS THEN PRESS [EXECUTE].
*LIGHT AREA AT LEFT SIDE ON DOCUMENT GLASS.
FACTORY
SERVICE
EXECUTE

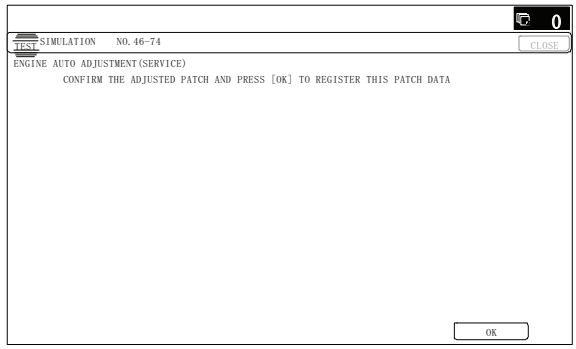
The printer color balance adjustment (step 1) is automatically performed and the color balance check patch image is printed out.

If there is any streak or unclear print on the printed check pattern, check the print engine for any problems.


PRINTER CALIBRATION
Low density
High density
Y
M
C
Bk
A B C D E F G H I J K L M N O P Q
1) The max. density section is not blurred.
2) Patch C or D of each of Y, M, C, and BK is very slightly copied.
3) Patch for each of Y, M, C, BK
・The patch density is identical between patches or not reversed.
・The patch density is changed gradually.

8) The initial setting menu of the halftone image correction is displayed. Press [OK] key.

The initial setting of the halftone image correction is performed.

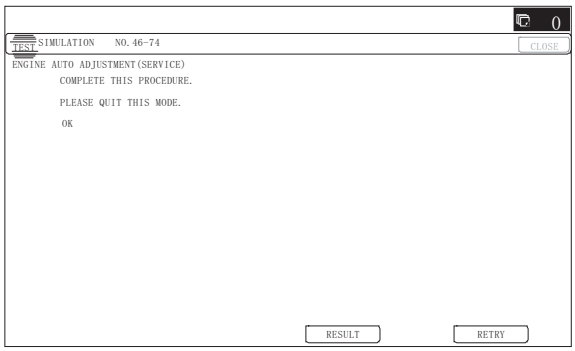

SIMULATION NO. 46-74
CLOSE
ENGINE AUTO ADJUSTMENT(SERVICE)
CONFIRM THE ADJUSTED PATCH AND PRESS [OK] TO REGISTER THIS PATCH DATA
OK

9) Wait until [EXECUTE] key is displayed. When it is displayed, press it.

The halftone image correction is performed.

10) When "COMPLETED THIS PROCEDURE" is displayed, the adjustment operation is completed.

Cancel SIM46-74.



Important

The adjustment result becomes valid only when the both adjustments in the copy mode and in the printer mode are completed.

For example, if the copy color balance adjustment (automatic adjustment) is performed and the simulation is canceled, the adjustment result is invalid.

11) Check the copy color balance and density.

(Refer to the item of the copy color balance and density check.)

When satisfactory color balance and density are not obtained from the automatic adjustment by selecting the factory target in procedure 4), change the factory color balance target with SIM 63-11 and repeat the procedures from 1).

If a satisfactory result is not obtained with the above procedure, perform the manual color balance adjustment (ADJ 10C (2)).

Also when the service target is selected in procedure 4) to execute the automatic adjustment and a satisfactory result is not obtained, perform the manual color balance adjustment (ADJ 10C (2)).

12) Check the printer color balance and density.

(Refer to the item of the printer color balance and density check.)

When satisfactory color balance and density are not obtained from the automatic adjustment by selecting the factory target in procedure 7), change the factory color balance target with SIM 67-26 and repeat the procedures from 1).

If a satisfactory result on the color balance and the density is not obtained with the automatic adjustment, execute the manual adjustment (SIM 67-25) (ADJ 10E (2)).

Also when the service target is selected in procedure 7) to execute the automatic adjustment and a satisfactory result is not obtained, perform the manual color balance adjustment (ADJ 10E (2)).

If the color balance or density is not in the satisfactory level even after execution of the automatic and manual adjustments, there may be another cause.

Troubleshoot the cause, repair or perform necessary works, and repeat the adjustment from the beginning.

10-C Copy quality adjustment (Basic adjustment)

This adjustment must be performed in the following cases:

* When a consumable part (developer, OPC drum, transfer belt) is replaced.
* The CCD unit has been replaced.
* When the scanner (reading) section is disassembled.
* When the scanner (reading) unit is replaced.
* U2 trouble has occurred.
* When the MFP PWB is replaced.
* When the EEPROM on the MFP PWB is replaced.
* The scanner control PWB has been replaced.
* The EEPROM on the scanner control PWB has been replaced.

10-C (1) Copy color balance and density adjustment (Automatic adjustment)

a. General

The color balance adjustment (automatic adjustment) is used to adjust the copy density of each of Cyan, Magenta, Yellow, and Black automatically.

When this adjustment is executed, the color balance adjustments of all the copy modes are revised.

There are following two modes in the auto color balance adjustment.

1) Auto color balance adjustment by the serviceman (SIM 46-24 is used.)
2) Auto color balance adjustment by the user (The user program mode is used.) (The color balance target is the service target.)

The auto color balance adjustment by the user is provided to reduce the number of service calls.

If the copy color balance is lost for some reason, the user can use this color balance adjustment to recover the balance.

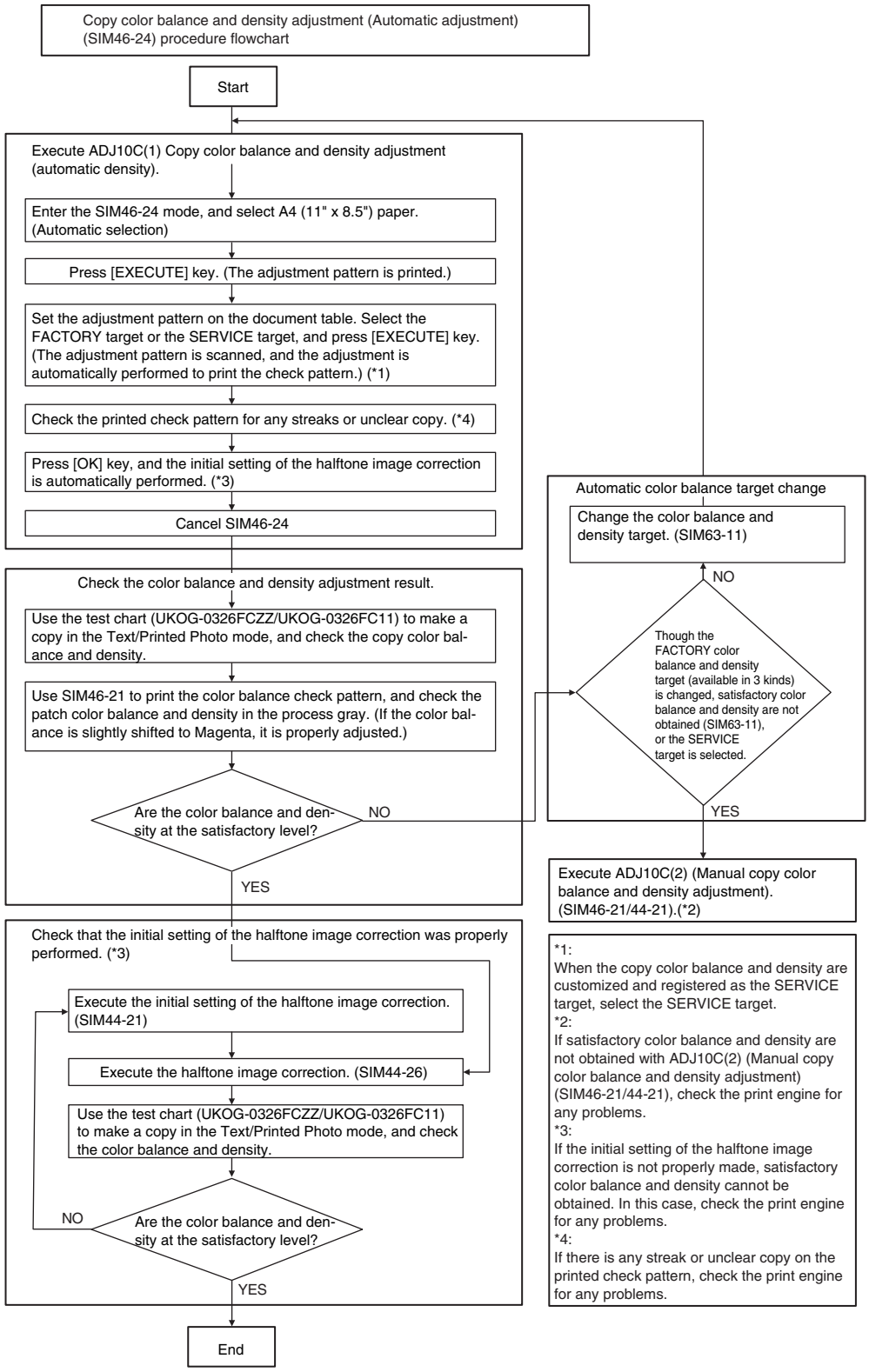
When, however, the machine has a fatal problem or when the machine condition is greatly changed, this function does not work effectively.

If the machine condition is dramatically changed, a fatal problem occurs, or the normal color targets cannot be obtained, service must recalibrate the machine to specification.

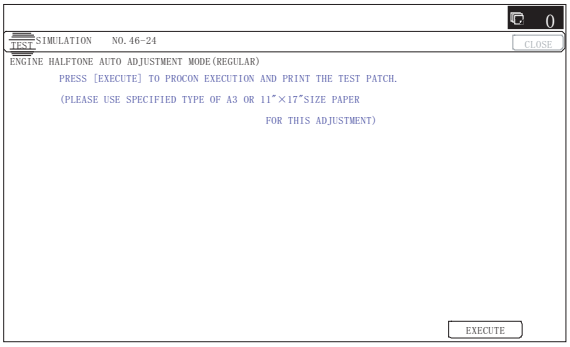
To perform the adjustment, the above difference must be fully understood.

b. Adjustment procedure

(Auto color balance adjustment by the serviceman)


Copy color balance and density adjustment (Automatic adjustment) (SIM46-24) procedure flowchart
Start
Execute ADJ10C(1) Copy color balance and density adjustment (automatic density).
Enter the SIM46-24 mode, and select A4 (11" x 8.5") paper. (Automatic selection)
Press [EXECUTE] key. (The adjustment pattern is printed.)
Set the adjustment pattern on the document table. Select the FACTORY target or the SERVICE target, and press [EXECUTE] key. (The adjustment pattern is scanned, and the adjustment is automatically performed to print the check pattern.) (*1)
Check the printed check pattern for any streaks or unclear copy. (*4)
Press [OK] key, and the initial setting of the halftone image correction is automatically performed. (*3)
Cancel SIM46-24
Check the color balance and density adjustment result.
Use the test chart (UKOG-0326FCZZ/UKOG-0326FC11) to make a copy in the Text/Printed Photo mode, and check the copy color balance and density.
Use SIM46-21 to print the color balance check pattern, and check the patch color balance and density in the process gray. (If the color balance is slightly shifted to Magenta, it is properly adjusted.)
Are the color balance and density at the satisfactory level?
NO
YES
Automatic color balance target change
Change the color balance and density target. (SIM63-11)
NO
Though the FACTORY color balance and density target (available in 3 kinds) is changed, satisfactory color balance and density are not obtained (SIM63-11), or the SERVICE target is selected.
YES
Execute ADJ10C(2) (Manual copy color balance and density adjustment). (SIM46-21/44-21).(*2)
Check that the initial setting of the halftone image correction was properly performed. (*3)
Execute the initial setting of the halftone image correction. (SIM44-21)
Execute the halftone image correction. (SIM44-26)
Use the test chart (UKOG-0326FCZZ/UKOG-0326FC11) to make a copy in the Text/Printed Photo mode, and check the color balance and density.
NO
Are the color balance and density at the satisfactory level?
YES
End
*1:
When the copy color balance and density are customized and registered as the SERVICE target, select the SERVICE target.
*2:
If satisfactory color balance and density are not obtained with ADJ10C(2) (Manual copy color balance and density adjustment) (SIM46-21/44-21), check the print engine for any problems.
*3:
If the initial setting of the halftone image correction is not properly made, satisfactory color balance and density cannot be obtained. In this case, check the print engine for any problems.
*4:
If there is any streak or unclear copy on the printed check pattern, check the print engine for any problems.

1) Enter the SIM 46-24 mode.

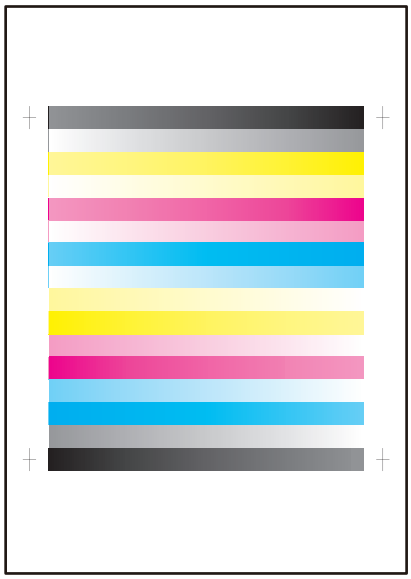

SIMULATION NO. 46-24
CLOSE
ENGINE HALFTONE AUTO ADJUSTMENT MODE(REGULAR)
PRESS [EXECUTE] TO PROCON EXECUTION AND PRINT THE TEST PATCH.
(PLEASE USE SPECIFIED TYPE OF A3 OR 11"×17"SIZE PAPER
FOR THIS ADJUSTMENT)
EXECUTE

2) Press [EXECUTE] key. (A4/11" x 8.5" or A3/11" x 17" paper is automatically selected.)

   The color patch image (adjustment pattern) is printed out.

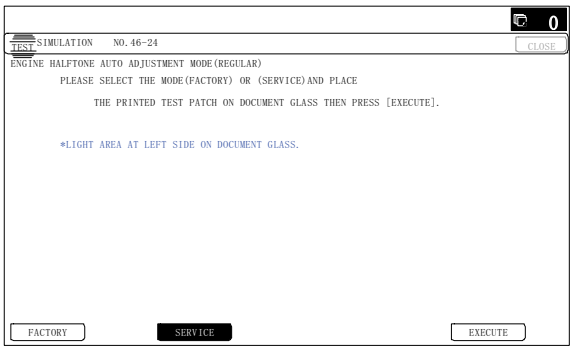
3) Set the color patch image (adjustment pattern) paper printed in procedure 2) on the document table.

   Place the printed color patch image (adjustment pattern) paper on the document table so that the thin lines on the paper are on the left side. Place 5 sheets of white paper on the printed color patch image (adjustment pattern) paper.

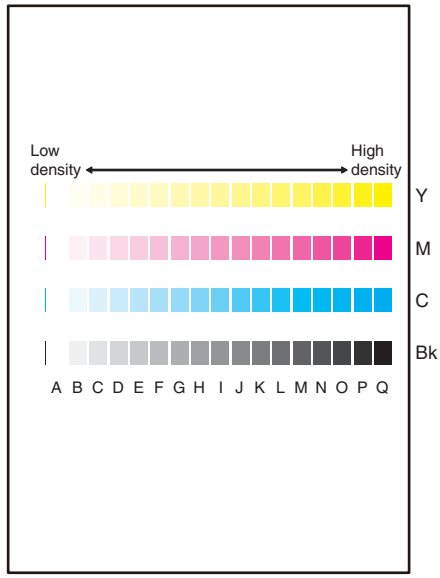


4) Select [FACTORY] target, and press [EXECUTE] key.

   When the color balance is customized with the manual color balance adjustment (SIM 46-21) according to the user's request and the color balance is registered as the service target with SIM 63-7, if the color balance is adjusted to that color balance, select the service target.

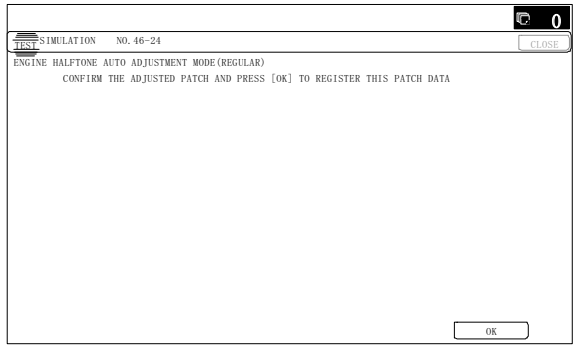

SIMULATION NO. 46-24
CLOSE
ENGINE HALFTONE AUTO ADJUSTMENT MODE(REGULAR)
PLEASE SELECT THE MODE(FACTORY) OR (SERVICE)AND PLACE
THE PRINTED TEST PATCH ON DOCUMENT GLASS THEN PRESS [EXECUTE].
*LIGHT AREA AT LEFT SIDE ON DOCUMENT GLASS.
FACTORY
SERVICE
EXECUTE

The copy color balance adjustment is automatically executed to print the color balance check patch image. Wait until the operation panel shown in procedure 5) is displayed.



5) Press [OK] key on the operation panel.

   According to data of this adjustment, the initial setting of the halftone image correction is performed.

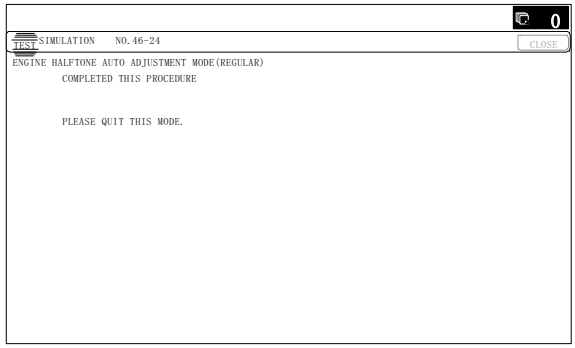

SIMULATION NO. 46-24
CLOSE
ENGINE HALFTONE AUTO ADJUSTMENT MODE(REGULAR)
CONFIRM THE ADJUSTED PATCH AND PRESS [OK] TO REGISTER THIS PATCH DATA
OK

Note

After pressing [OK] key, the initial setting of the halftone image correction is started. During the operation, "NOW REGISTERING THE NEW TARGET OF HALFTONE PROCON." is displayed. This operation takes several minutes.

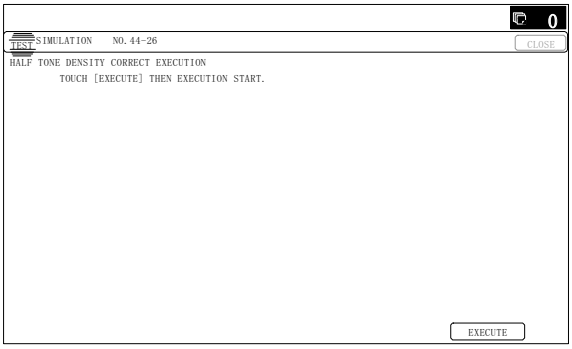
After completion of the operation, "PLEASE QUIT THIS MODE" is displayed.

Do not cancel the simulation until "PLEASE QUIT THIS MODE" is displayed.



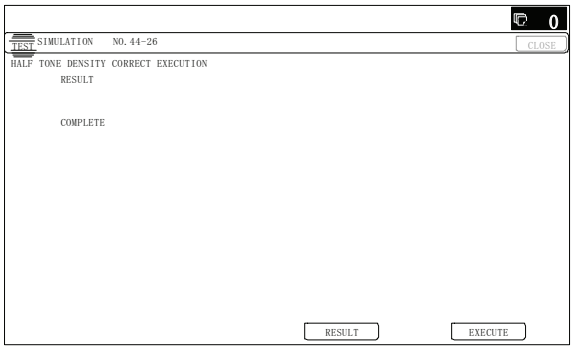
6) Check the color balance and density.
(Refer to the item of the copy color balance and density check.)

7) Use SIM44-26 to execute the halftone image correction. (Forcible execution)
Enter the SIM44-26 mode and press [EXECUTE] key.
[EXECUTE] key is highlighted and the operation is started.

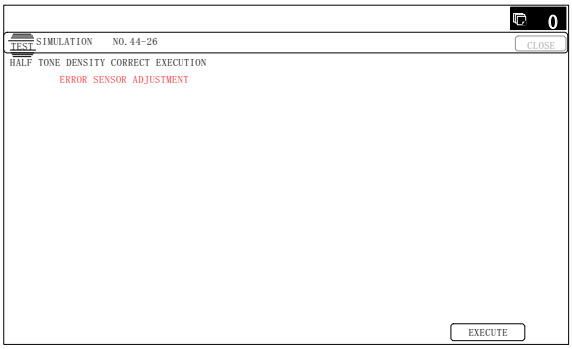


It takes several minutes to complete the operation. After completion of the operation, "COMPLETE" is displayed.

(Normal end (Auto transition))



(Abnormal end (Auto transition))



After completion of the operation, the simulation is canceled.

8) Use the servicing color test chart (UKOG-0326FCZZ/UKOG-0326FC11) in the Text/Photo mode (Manual) to check the copy color balance and density. (Refer to the item of the copy color balance and density check.)
If the copy color balance and density are not satisfactory, perform the following procedures.

9) Execute the initial setting of the halftone image correction. (SIM 44-21)

10) Execute the halftone image correction. (Forcible execution) (SIM44-26)

11) Use the servicing color test chart (UKOG-0317FCZZ/UKOG-0317FC11) in the Text/Printed Photo mode (Manual) to check the copy color balance/density. (Refer to the item of the copy color balance and density check.)

Though the above procedures 9) - 11) are performed, the copy color balance and density are not in the specified range, there may be another cause.

Troubleshoot the cause, repair or perform necessary works, and repeat the adjustment from the beginning.

When satisfactory color balance and density are not obtained from the automatic adjustment by selecting the factory target in procedure 4), change the factory color balance target with SIM 63-11 and repeat the procedures from 1).

If a satisfactory result on the color balance and the density is not obtained with the automatic adjustment, execute the manual adjustment (SIM 46-21) (ADJ 10C (2)).

Also when the service target is selected in procedure 7) to execute the automatic adjustment and a satisfactory result is not obtained, perform the manual color balance adjustment (ADJ 10C(2)).

If the color balance or density is not in the satisfactory level even after execution of the automatic and manual adjustments, there may be another cause.

Troubleshoot the cause, repair or perform necessary works, and repeat the adjustment from the beginning.

10-C (2) Copy color balance and density adjustment (Manual adjustment)

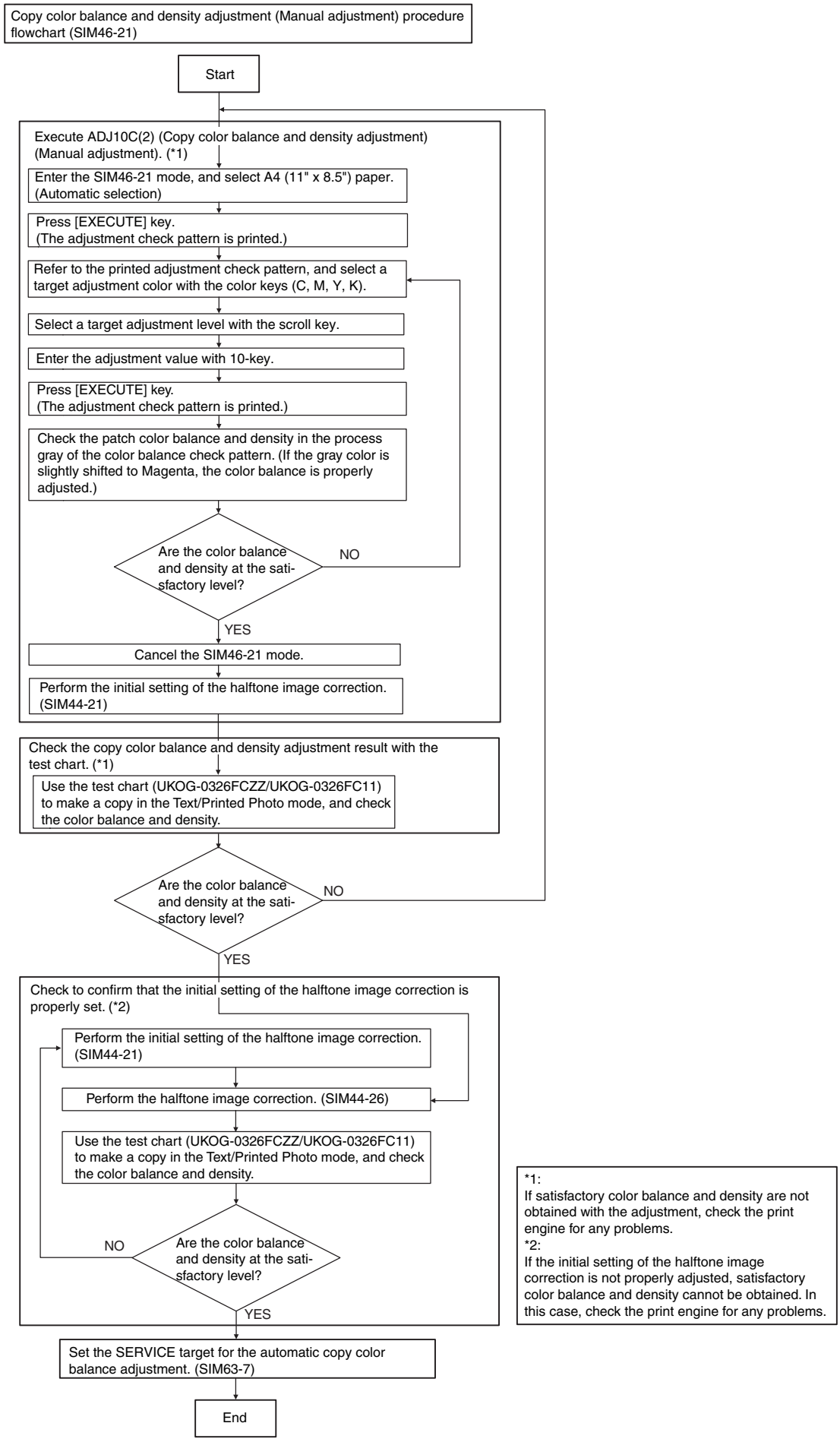
a. General

The color balance adjustment (Manual adjustment) is used to adjust the copy density of CMYK. This is used at the following situation. When the result of auto adjustment described above is not existing within the range of reference. When a fine adjustment is required. When there is request from the user for changing (customizing) the color balance.

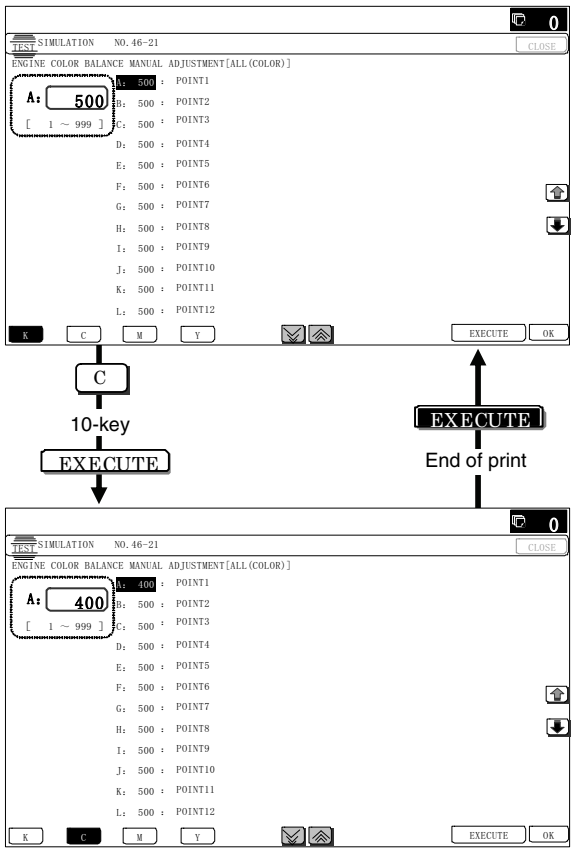
This manual adjustment is executed only for the color patch which could not adjusted properly in the automatic adjustment.

If the color balance is improper, execute the automatic color balance adjustment in advance, and execute this adjustment for better efficiency.

b. Adjustment procedure


Copy color balance and density adjustment (Manual adjustment) procedure flowchart (SIM46-21)
Start
Execute ADJ10C(2) (Copy color balance and density adjustment) (Manual adjustment). (*1)
Enter the SIM46-21 mode, and select A4 (11" x 8.5") paper. (Automatic selection)
Press [EXECUTE] key. (The adjustment check pattern is printed.)
Refer to the printed adjustment check pattern, and select a target adjustment color with the color keys (C, M, Y, K).
Select a target adjustment level with the scroll key.
Enter the adjustment value with 10-key.
Press [EXECUTE] key. (The adjustment check pattern is printed.)
Check the patch color balance and density in the process gray of the color balance check pattern. (If the gray color is slightly shifted to Magenta, the color balance is properly adjusted.)
Are the color balance and density at the satisfactory level?
NO
YES
Cancel the SIM46-21 mode.
Perform the initial setting of the halftone image correction. (SIM44-21)
Check the copy color balance and density adjustment result with the test chart. (*1)
Use the test chart (UKOG-0326FCZZ/UKOG-0326FC11) to make a copy in the Text/Printed Photo mode, and check the color balance and density.
Are the color balance and density at the satisfactory level?
NO
YES
Check to confirm that the initial setting of the halftone image correction is properly set. (*2)
Perform the initial setting of the halftone image correction. (SIM44-21)
Perform the halftone image correction. (SIM44-26)
Use the test chart (UKOG-0326FCZZ/UKOG-0326FC11) to make a copy in the Text/Printed Photo mode, and check the color balance and density.
Are the color balance and density at the satisfactory level?
NO
YES
Set the SERVICE target for the automatic copy color balance adjustment. (SIM63-7)
End
*1:
If satisfactory color balance and density are not obtained with the adjustment, check the print engine for any problems.
*2:
If the initial setting of the halftone image correction is not properly adjusted, satisfactory color balance and density cannot be obtained. In this case, check the print engine for any problems.

1) Enter the SIM46-21 mode.

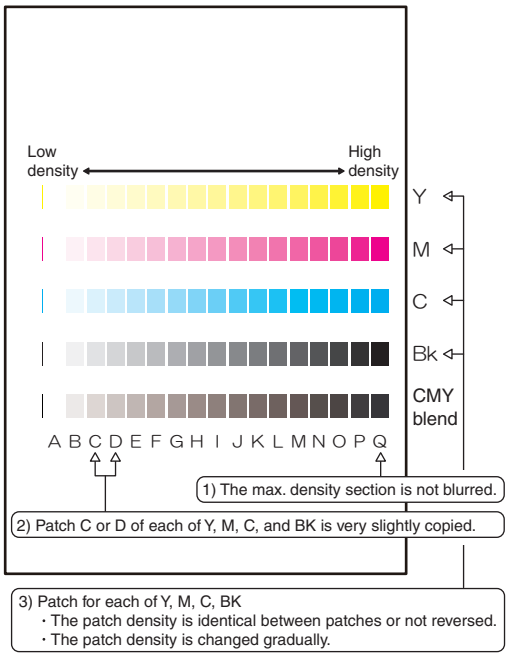


2) Press [EXECUTE] key. (A4/11" x 8.5" or A3/11" x 17" paper is automatically selected.)

The color balance adjustment pattern is printed.

3) Check that the following specification is satisfied or the color balance is satisfactory.

If not, execute the following procedures.


Low density
High density
Y
M
C
Bk
CMY blend
A B C D E F G H I J K L M N O P Q
1) The max. density section is not blurred.
2) Patch C or D of each of Y, M, C, and BK is very slightly copied.
3) Patch for each of Y, M, C, BK
・The patch density is identical between patches or not reversed.
・The patch density is changed gradually.

The print density must be changed gradually from the lighter level to the darker level. The density changing direction must not be reversed.

The density level of each color must be almost at the same level.

Patch B may not be copied.

Patch A must not be copied.

When, however, the color balance is adjusted according to a request from the user, there is no need to set to the standard color balance stated above.

If the color balance of each patch of the process black (CMY mixed color) is slightly shifted to Magenta, it means that the adjustment is proper. If the color balance of the adjustment pattern printed in this mode is slightly shifted to Magenta, it is converted into the natural gray color balance by the color correction table in an actual copy mode. (When the color balance target is DEF 1.)

4) Select the color to be adjusted with the color select key, and select the adjustment point with the scroll key.

5) Enter the adjustment value with 10-key and press [OK] key.

The adjustment value is set in the range of (1 - 999). When SIM 46-24 is used to adjust the automatic color balance and density, all the set values of this simulation are set to 500.

To increase the density, increase the adjustment value. To decrease the density, decrease the adjustment value.

Repeat procedures of 2) - 5) until the condition of 3) is satisfied.

When the overall density is low, or when the density is high and patch A is copied, use the arrow key to adjust all the adjustment values of A - Q (MAX) to a same level collectively.

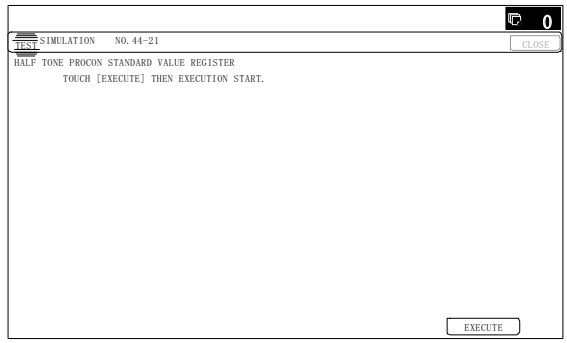
Then, adjust each patch density individually. This is an efficient way of adjustment.

Referring to the black/gray patches, adjust so that each process (CMY) black/gray patch color balance of A - Q (MAX) approaches the black/gray patch level as far as possible.

6) Make a copy of the servicing color test chart (UKOG-0326FCZZ/UKOG-0326FC11) and a user's document according to necessity in the normal copy mode, the text/Printed Photo mode (Manual) to check the adjustment result.

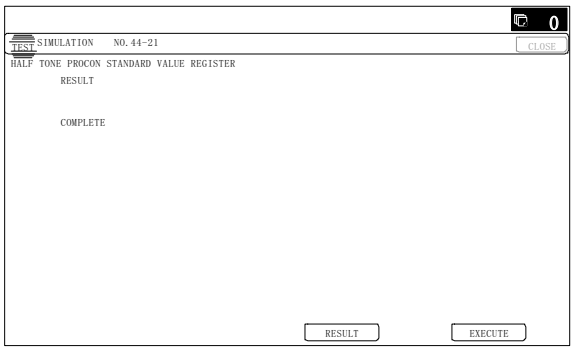
(Refer to the item of the copy color balance/density check.)

7) Execute SIM 44-21. (Execute the initial setting of the halftone image correction.)

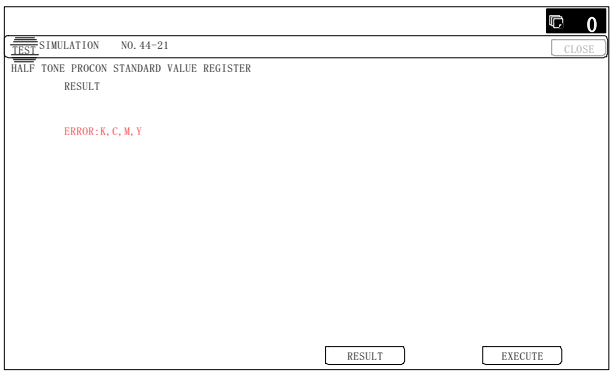


It takes several minutes to complete the operation. After completion of the operation, "COMPLETE" is displayed.

(Normal end (Auto transition))



(Abnormal end (Auto transition))



After completion of the operation, the simulation is canceled.

Note

This procedure is to save the copy color balance adjustment data as the reference data for the halftone correction.

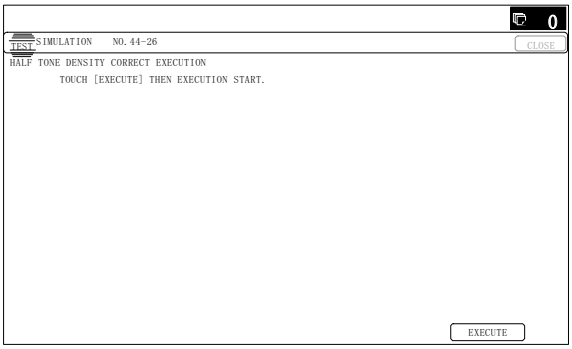
Immediately after execution of ADJ 10C (2) (Color balance adjustment, Manual) with SIM 46-21, be sure to execute this procedure.

When ADJ 10C (1) (Color balance adjustment, Auto) is executed with SIM 46-24, this procedure is automatically executed.

8) Use SIM 44-26 to execute the halftone image correction. (Forcible execution)

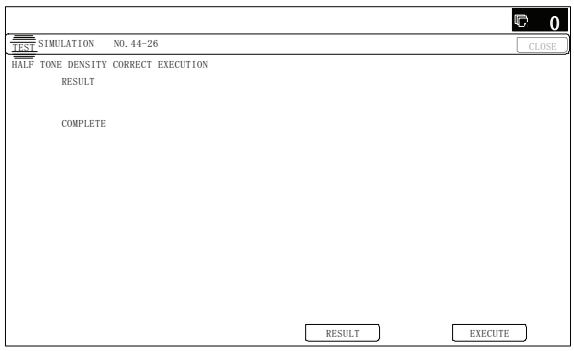
Enter the SIM 44-26 mode and press [EXECUTE] key.

[EXECUTE] key is highlighted and the operation is started.

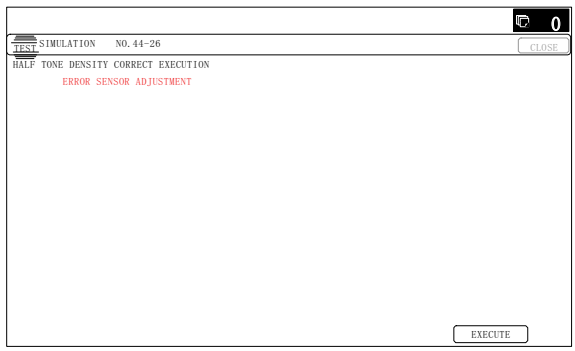


It takes several minutes to complete the operation. After completion of the operation, "COMPLETE" is displayed.

(Normal end (Auto transition))



(Abnormal end (Auto transition))



After completion of the operation, the simulation is canceled.

9) Make a copy of the servicing color test chart (UKOG-0317FCZZ/UKOG-0317FC11) and a user's document according to necessity in the Text/Printed Photo mode (Manual) and check the adjustment result again. (Refer to the item of the copy color balance/density check.)

If the copy color balance and density are not adjusted to the specified level, there may be another cause.

Troubleshoot the cause, and repair or perform proper treatments, and try all the procedures of the print image adjustment from the beginning.

Note

If the color balance is customized, use SIM 63-7 to register the color balance as the service target.

If the color balance is not customized, this procedure is not required.

If the customized color balance is registered as the service target, the automatic color balance adjustment can be made in the next color balance adjustment.

10-D Copy / Image send / FAX image quality adjustment (Individual adjustment)

a. General

This adjustment is used to execute the fine adjustment in each mode only when a satisfactory image quality is not obtained by the basic adjustments ADJ 10B and ADJ 10C or there is a request from the user. Normally there is no need to execute this adjustment.

In this adjustment, the adjustment result may be applied to the image send mode and the FAX mode as well as the copy mode.

This must be well understood for execution of the adjustment.

		Copy MODE				IMAGE SEND(SCAN) MODE					
		Color mode		Monochrome mode		Color mode		Monochrome mode			
		Auto	Manual	Auto	Manual	Auto	Manual	Auto	Manual	FAX	Printer
46-01	Color copy density adjustment (for each color copy mode) (separately for the low-density area and the high-density area) (No need to adjust normally)	○	○	-	-	-	-	-	-	-	-
46-02	Monochrome copy density adjustment (for each monochrome copy mode) (separately for the low-density area and the high-density area) (No need to adjust normally)	-	-	○	○	-	-	-	-	-	-
46-04	Color image send mode image density adjustment (for each mode) (No need to adjust normally)	-	-	-	-	○	○	-	-	-	-
46-05	Monochrome image send mode image density adjustment (for each mode) (No need to adjust normally)	-	-	-	-	-	-	○	○	-	-
46-08	Image send mode RGB color balance adjustment (separately for the low-density area and the high-density area) (No need to adjust normally)	-	-	-	-	○	○	-	-	-	-
46-09	RSPF mode (Copy/Scan/FAX) density adjustment (No need to adjust normally)	○	○	○	○	○	○	○	○	○	-
46-10	Color copy color balance, gamma adjustment (for each color copy mode) (No need to adjust normally)	○	○	-	-	-	-	-	-	-	-
46-16	Monochrome copy density, gamma adjustment (for each monochrome copy mode) (No need to adjust normally)	-	-	○	○	-	-	-	-	-	-
46-19	Automatic monochrome (Copy/Scan/FAX) mode document density scanning operation (exposure operation) conditions setting (Normally no need to set)	-	-	○	-	-	-	○	-	○	-
46-21	Copy color balance and density adjustment (Manual adjustment)	○	○	○	○	-	-	-	-	-	-
46-23	Copy high density image density reproduction setting (Normally unnecessary to the setting change)	○	○	○	○	-	-	-	-	-	-
46-24	Copy color balance and density adjustment (Automatic adjustment)	○	○	○	○	-	-	-	-	-	-
46-25	Copy color balance adjustment (Single color copy mode) (No need to adjust normally)	-	○	-	-	-	-	-	-	-	-
46-26	Single color copy mode color balance default setting	-	○	-	-	-	-	-	-	-	-
46-27	Color copy, text, line image reproduction adjustment (edge gamma, density adjustment) (Text, Map mode) (No need to adjust normally)	○	○	-	-	-	-	-	-	-	-
46-30	Copy mode sub scanning direction resolution setting	○	○	-	-	-	-	-	-	-	-
46-32	Document low density image density reproduction adjustment in the automatic monochrome (Copy/Scan/FAX) mode (No need to adjust normally) (Background density adjustment in the scanning section)	-	-	○	-	-	-	○	-	○	-
46-36	2-color (red, black) copy mode fine color adjustment (No need to adjust normally)	-	○	-	-	-	-	-	-	-	-
46-37	Monochrome (Copy/Scan/FAX) mode color document reproduction adjustment (No need to adjust normally)	-	-	○	○	-	-	○	○	○	○ (*3)(*5)
46-38	Color copy mode dark area gradation (black component quantity) adjustment (No need to adjust normally)	○	○	-	-	-	-	-	-	-	-
46-39	FAX send image sharpness adjustment	-	-	-	-	-	-	-	-	○	-
46-40	FAX send image density adjustment (Collective adjustment of all the modes)	-	-	-	-	-	-	-	-	○	-

		Copy MODE				IMAGE SEND(SCAN) MODE					
		Color mode		Monochrome mode		Color mode		Monochrome mode			
		Auto	Manual	Auto	Manual	Auto	Manual	Auto	Manual	FAX	Printer
46-41	FAX send image density adjustment (Normal text mode)	-	-	-	-	-	-	-	-	○	-
46-42	FAX send image density adjustment (Fine text mode)	-	-	-	-	-	-	-	-	○	-
46-43	FAX send image density adjustment (Super fine mode)	-	-	-	-	-	-	-	-	○	-
46-44	FAX send image density adjustment (Ultra fine mode)	-	-	-	-	-	-	-	-	○	-
46-45	FAX send image density adjustment (600dpi mode)	-	-	-	-	-	-	-	-	○	-
46-46	FAX send image density adjustment (RGB_RIP)	-	-	-	-	-	-	-	-	○ (*2)(*5)	-
46-47	Copy image, image send image, FAX send image (JPEG) compression ratio setting (Normally unnecessary to the setting change)	○	○	○	○	○	○	○	○	○ (*3)(*5)	○ (*3)(*5)
46-51	Gamma manual adjustment for the copy mode heavy paper and the image process mode (dither) (No need to adjust normally)	○	○	○	○	-	-	-	-	-	-
46-52	Gamma default setting for the copy mode heavy paper and the image process mode (dither)	○	○	○	○	-	-	-	-	-	○ (*4)(*5)
46-54	Copy gamma, color balance adjustment for each dither (Automatic adjustment) (No need to adjust normally)	○	○	○	○	-	-	-	-	-	○ (*4)(*5)
46-55	Dropout color setting	-	-	-	-	-	-	-	○	-	-
46-58	Pseudo resolution UP function setting	○	○	○	○	-	-	-	-	-	-
46-59	Pseudo resolution UP function adjustment	○	○	○	○	-	-	-	-	-	○
46-60	Color (Copy/Scan) mode sharpness adjustment (No need to adjust normally)	○	○ (1 copy)	-	-	○	-	-	-	-	○
46-61	Area separation recognition level adjustment (No need to adjust normally)	○	○ (*1)	○	○ (*1)	○	○ (*1)	○	○ (*1)	-	-
46-62	ACS, area separation, background image process, automatic exposure mode operation conditions setting (Normally unnecessary to the setting change)	○	○	○	○	○	○	○	○	-	-
46-63	Copy/Scan low density image density adjustment (for each mode) (No need to adjust normally)	○	○	○	○	○	○	○	○	-	-
46-65	Color correction table setting	○	○	-	-	-	-	-	-	-	○
46-66	Watermark adjustment	○	○	○	○	-	-	-	-	-	-
46-74	Printer/Copy color balance and density adjustment (Automatic adjustment) (Basic adjustment)	○	○	○	○	-	-	-	-	-	○
46-90	High-compression PDF image process operation setting (Normally unnecessary to the setting change)	-	-	-	-	○	○	-	-	-	-
46-91	Black text emphasis fine adjustment	-	-	-	-	○	○	-	-	-	-

*1: Text Printed Photo / Copy document, Text Printed Photo only

*2: Printer RGB save → FAX resend only

*3: Printer RGB save only

*4: Only the watermark is related.

*5: 26cpm/36cpm/31cpm(A) machine only

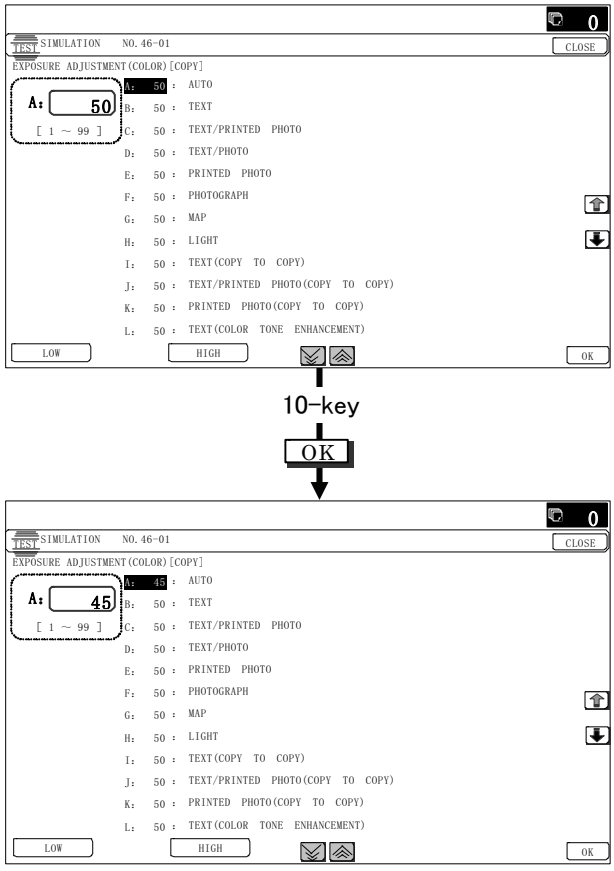
10-D (1) Color copy density adjustment (for each color copy mode) (separately for the low-density area and the high-density area) (No need to adjust normally)

The density is adjusted in each copy mode individually.

This adjustment must be performed in the following cases:

* When there is necessity to change the copy density of the low density and high density part at each copy density individually.
* When there is necessity to change the density gradient of the copy by each the copy mode individually.
* When there is necessity to change all copy density by each the copy mode individually.
* When there is request from the user.

1) Enter the SIM 46-1 mode.



2) Select the copy mode to be adjusted with the scroll key.

Display/Item		Content		Setting range	Default
A	AUTO	Auto	LOW	1 - 99	50
			HIGH	1 - 99	50
B	TEXT	Text	LOW	1 - 99	50
			HIGH	1 - 99	50
C	TEXT/PRINTED PHOTO	Text/Printed Photo	LOW	1 - 99	50
			HIGH	1 - 99	50
D	TEXT/PHOTO	Text/Photograph	LOW	1 - 99	50
			HIGH	1 - 99	50
E	PRINTED PHOTO	Printed Photo	LOW	1 - 99	50
			HIGH	1 - 99	50
F	PHOTOGRAPH	Photograph	LOW	1 - 99	50
			HIGH	1 - 99	50
G	MAP	Map	LOW	1 - 99	50
			HIGH	1 - 99	50
H	LIGHT	Light document	LOW	1 - 99	50
			HIGH	1 - 99	50
I	TEXT (COPY TO COPY)	Text (Copy document)	LOW	1 - 99	50
			HIGH	1 - 99	50
J	TEXT/PRINTED PHOTO (COPY TO COPY)	Text/Printed Photo (Copy document)	LOW	1 - 99	50
			HIGH	1 - 99	50
K	PRINTED PHOTO (COPY TO COPY)	Printed Photo (Copy document)	LOW	1 - 99	50
			HIGH	1 - 99	50
L	TEXT (COLOR TONE ENHANCEMENT)	Text (Color tone enhancement)	LOW	1 - 99	50
			HIGH	1 - 99	50
M	TEXT/PRINTED PHOTO (COLOR TONE ENHANCEMENT)	Text/Printed Photo (Color tone enhancement)	LOW	1 - 99	50
			HIGH	1 - 99	50
N	TEXT/PHOTO (COLOR TONE ENHANCEMENT)	Text/Photograph (Color tone enhancement)	LOW	1 - 99	50
			HIGH	1 - 99	50
O	PRINTED PHOTO (COLOR TONE ENHANCEMENT)	Printed Photo (Color tone enhancement)	LOW	1 - 99	50
			HIGH	1 - 99	50
P	PHOTOGRAPH (COLOR TONE ENHANCEMENT)	Photograph (Color tone enhancement)	LOW	1 - 99	50
			HIGH	1 - 99	50
Q	MAP (COLOR TONE ENHANCEMENT)	Map (Color tone enhancement)	LOW	1 - 99	50
			HIGH	1 - 99	50
R	SINGLE COLOR	Single color	LOW	1 - 99	50
			HIGH	1 - 99	50
S	SINGLE COLOR (COPY TO COPY)	Single color (Copy document)	LOW	1 - 99	50
			HIGH	1 - 99	50
T	TWO COLOR	Two-color (Red/Black) copy	LOW	1 - 99	50
			HIGH	1 - 99	50
U	TWO COLOR (COPY TO COPY)	Two-color (Red/Black) copy (Copy document)	LOW	1 - 99	50
			HIGH	1 - 99	50

3) Enter the adjustment value with 10-key and press [OK] key.

When adjusting the copy density on the low density part, select "LOW" mode and change the adjustment value. When adjusting the copy density on the high density part, select "HIGH" mode and change the adjustment value.

When the adjustment value is increased, the copy density is increased. When the adjustment value is decreased, the copy density is decreased.

4) Make a copy and check the adjustment result.

Switch the adjustment simulation mode and the normal copy mode alternately, and adjust and check the adjustment result.

Repeat switching the adjustment simulation mode and the normal copy mode and changing the adjustment value and checking the copy until a satisfactory result is obtained.

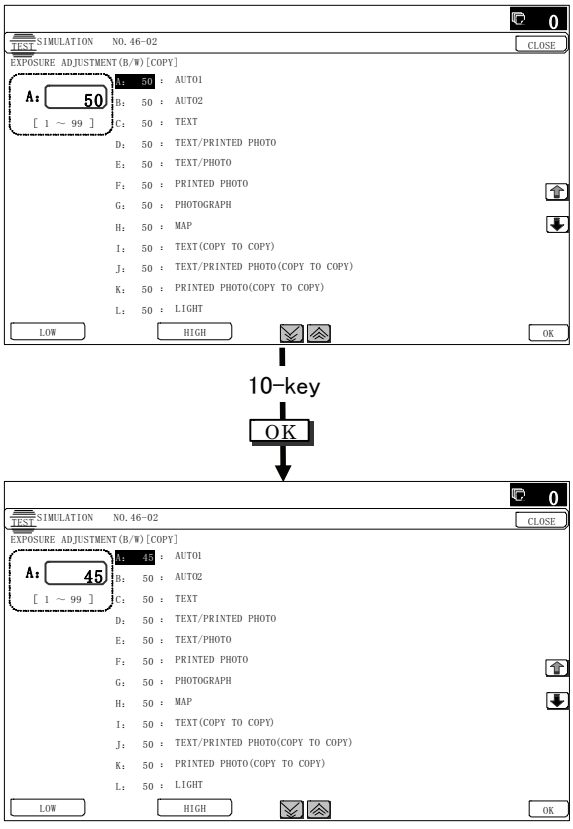
10-D (2) Monochrome copy density adjustment (for each monochrome copy mode) (separately for the low-density area and the high-density area) (No need to adjust normally)

The density is adjusted in each copy mode individually.

This adjustment must be performed in the following cases:

* When there is necessity to change the copy density of the low density and high density part at each copy density individually.
* When there is necessity to change the density gradient of the copy by each the copy mode individually.
* When there is necessity to change all copy density by each the copy mode individually.
* When there is request from the user.

1) Enter the SIM 46-2 mode.



2) Select the copy mode to be adjusted with the scroll key.

Display/Item		Content		Setting range	Default
A	AUTO1	Auto 1	LOW	1 - 99	50
			HIGH	1 - 99	50
B	AUTO2	Auto 2	LOW	1 - 99	50
			HIGH	1 - 99	50
C	TEXT	Text	LOW	1 - 99	50
			HIGH	1 - 99	50
D	TEXT/PRINTED PHOTO	Text/Printed Photo	LOW	1 - 99	50
			HIGH	1 - 99	50
E	TEXT/PHOTO	Text/Photograph	LOW	1 - 99	50
			HIGH	1 - 99	50
F	PRINTED PHOTO	Printed Photo	LOW	1 - 99	50
			HIGH	1 - 99	50
G	PHOTOGRAPH	Photograph	LOW	1 - 99	50
			HIGH	1 - 99	50
H	MAP	Map	LOW	1 - 99	50
			HIGH	1 - 99	50
I	TEXT (COPY TO COPY)	Text (Copy document)	LOW	1 - 99	50
			HIGH	1 - 99	50
J	TEXT/PRINTED PHOTO (COPY TO COPY)	Text/Printed Photo (Copy document)	LOW	1 - 99	50
			HIGH	1 - 99	50
K	PRINTED PHOTO (COPY TO COPY)	Printed Photo (Copy document)	LOW	1 - 99	50
			HIGH	1 - 99	50
L	LIGHT	Light document	LOW	1 - 99	50
			HIGH	1 - 99	50

3) Enter the adjustment value with 10-key and press [OK] key.

When adjusting the copy density on the low density part, select "LOW" mode and change the adjustment value. When adjusting the copy density on the high density part, select "HIGH" mode and change the adjustment value.

When the adjustment value is increased, the copy density is increased. When the adjustment value is decreased, the copy density is decreased.

4) Make a copy and check the adjustment result.

Switch the adjustment simulation mode and the normal copy mode alternately, and adjust and check the adjustment result.

Repeat switching the adjustment simulation mode and the normal copy mode and changing the adjustment value and checking the copy until a satisfactory result is obtained.

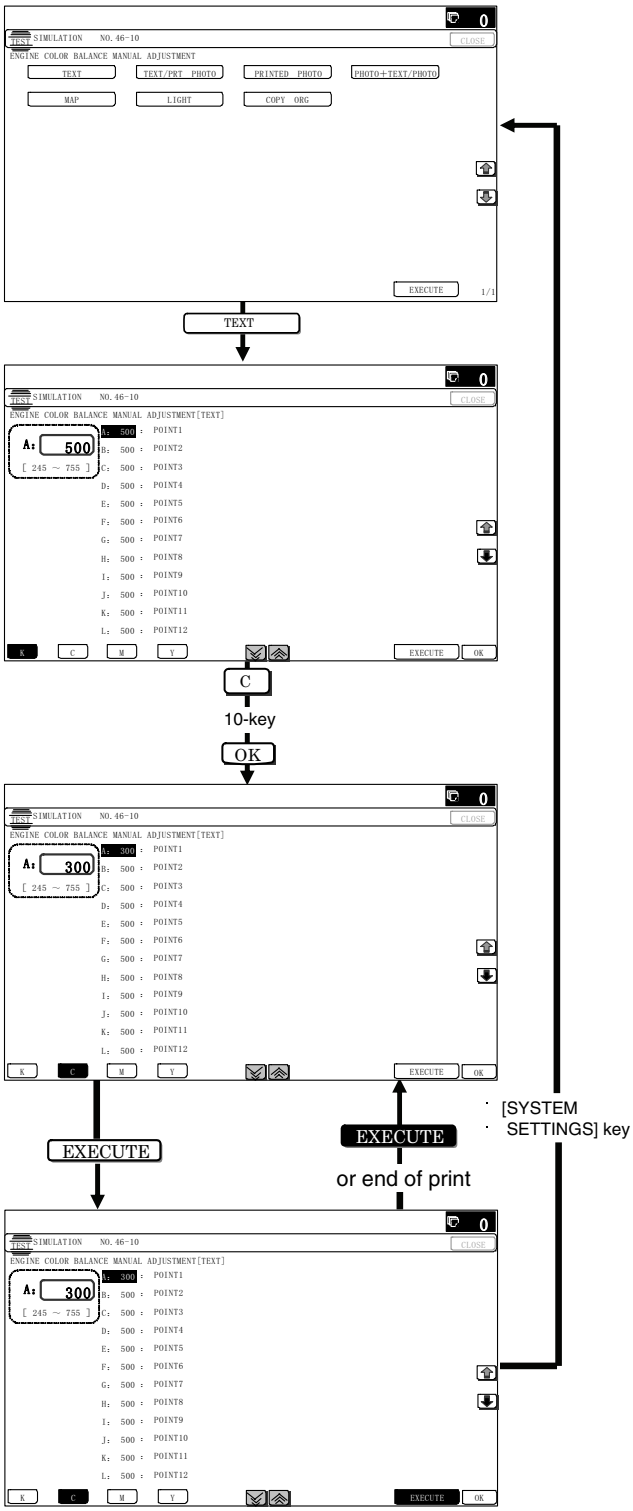
10-D (3) Color copy color balance, gamma adjustment (for each color copy mode) (No need to adjust normally)

This adjustment is used to execute the color balance adjustment for each density level in each color copy mode.

This adjustment must be performed in the following cases:

* When there is necessity to change the color balance and gamma by each the copy mode individually.
* When there is request from the user.

1) Enter the SIM 46-10 mode.



2) Select the copy mode to be adjusted with the mode key.
3) Select a color to change the adjustment value with the color key.
4) Select the density level (point) to be adjusted with the scroll key.

Item/Display		Density level (Point)	Adjustment value range	Default
A	POINT1	Point 1	1 - 999	500
B	POINT2	Point 2	1 - 999	500
C	POINT3	Point 3	1 - 999	500
D	POINT4	Point 4	1 - 999	500
E	POINT5	Point 5	1 - 999	500
F	POINT6	Point 6	1 - 999	500
G	POINT7	Point 7	1 - 999	500
H	POINT8	Point 8	1 - 999	500
I	POINT9	Point 9	1 - 999	500
J	POINT10	Point 10	1 - 999	500
K	POINT11	Point 11	1 - 999	500
L	POINT12	Point 12	1 - 999	500
M	POINT13	Point 13	1 - 999	500
N	POINT14	Point 14	1 - 999	500
O	POINT15	Point 15	1 - 999	500
P	POINT16	Point 16	1 - 999	500
Q	POINT17	Point 17	1 - 999	500

5) Enter the adjustment value with 10-key and press [OK] key.

   When the adjustment value is increased, the density is increased. When the adjustment value is decreased, the density is decreased.

   When the arrow key is pressed, the color densities selected with the color keys are collectively adjusted.

   That is, all the density levels (points) from the low density point to the high density point can be adjusted collectively.

   When [EXECUTE] key is pressed, the adjustment pattern is printed out.

   This adjustment pattern can be used to check the color balance and the density for each density level (point).

6) Make a copy and check the adjustment result.

   Switch the adjustment simulation mode and the normal copy mode alternately, and adjust and check the adjustment result.

   Repeat switching the adjustment simulation mode and the normal copy mode and changing the adjustment value and checking the copy until a satisfactory result is obtained.

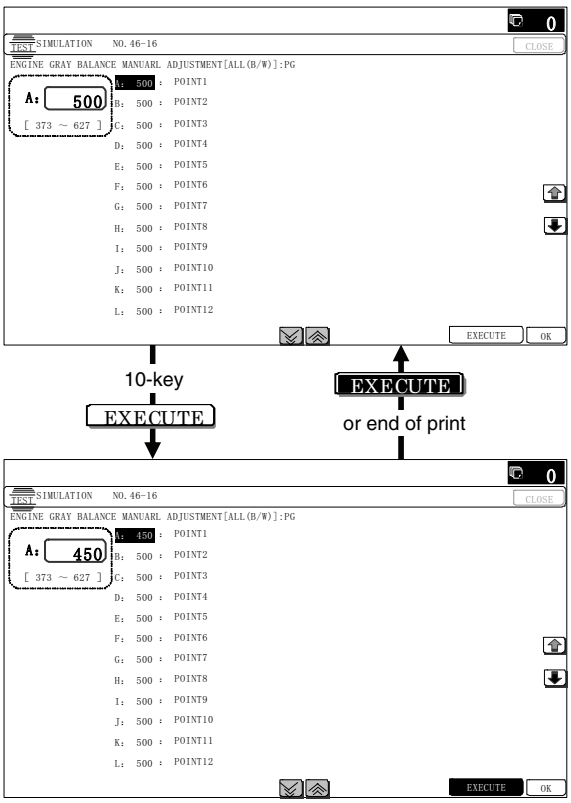
10-D (4) Monochrome copy density, gamma adjustment (for each monochrome copy mode) (No need to adjust normally)

This adjustment is used to execute the density adjustment for each density level in each monochrome copy mode.

This adjustment must be performed in the following cases:

* When it is required to change the gamma in each copy mode.
* When there is request from the user.

1) Enter the SIM 46-16 mode.



2) Select the density level (point) to be adjusted with the scroll key.

Item/Display		Density level (Point)	Adjustment value range	Default
A	POINT1	Point 1	1 - 999	500
B	POINT2	Point 2	1 - 999	500
C	POINT3	Point 3	1 - 999	500
D	POINT4	Point 4	1 - 999	500
E	POINT5	Point 5	1 - 999	500
F	POINT6	Point 6	1 - 999	500
G	POINT7	Point 7	1 - 999	500
H	POINT8	Point 8	1 - 999	500
I	POINT9	Point 9	1 - 999	500
J	POINT10	Point 10	1 - 999	500
K	POINT11	Point 11	1 - 999	500
L	POINT12	Point 12	1 - 999	500
M	POINT13	Point 13	1 - 999	500
N	POINT14	Point 14	1 - 999	500
O	POINT15	Point 15	1 - 999	500
P	POINT16	Point 16	1 - 999	500
Q	POINT17	Point 17	1 - 999	500

3) Enter the adjustment value with 10-key and press [OK] key.

When the adjustment value is increased, the density is increased. When the adjustment value is decreased, the density is decreased.

When the arrow key is pressed, the densities are collectively adjusted.

That is, all the density levels (points) from the low density point to the high density point can be adjusted collectively.

When [EXECUTE] key is pressed, the adjustment pattern is printed out.

The density at each density level (point) can be checked by referring to this printed adjustment pattern. However, it is more practical to make a copy and check it.

This adjustment pattern can be used to check the color balance and the density for each density level (point).

4) Make a copy and check the adjustment result.

Switch the adjustment simulation mode and the normal copy mode alternately, and adjust and check the adjustment result.

Repeat switching the adjustment simulation mode and the normal copy mode and changing the adjustment value and checking the copy until a satisfactory result is obtained.

10-D (5) Automatic monochrome (Copy/Scan/FAX) mode document density scanning operation (exposure operation) conditions setting (Normally no need to set)

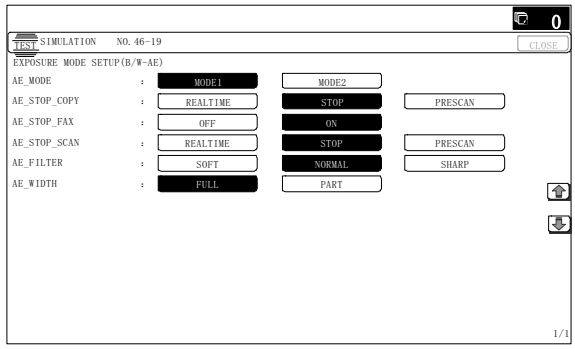
Use for setting the condition of read operation (Exposure) for document density in monochrome auto copy mode.

When a copy with correct density is not obtained by type of document, change the setting.

This setting is required in the following cases.

* When a proper density copy is not obtained in the monochrome automatic copy mode.
* When a document with images near its lead edge is copied.
* When a document with colored background is copied.

1) Enter the SIM 46-19 mode.



2) Set REALTIME, STOP or PRE-SCAN to adjustment item AE STOP COPY. For contents of each setting item, refer to below. Change the setting value of "AE WIDTH" item to "FULL" or "PART", in some cases.

Display/Item	Content	Set value	Default
AE_MODE	Auto exposure mode	MODE1, MODE2	MODE1
AE_STOP_COPY	Auto B/W exposure Stop (for copy)	REALTIME/ STOP/PRESCAN	STOP
AE_STOP_FAX	Auto B/W exposure Stop (for FAX)	ON/OFF	ON
AE_STOP_SCAN	Auto B/W exposure Stop (for scanner)	REALTIME/ STOP/PRESCAN	STOP
AE_FILTER	Auto exposure filter setting	SOFT	NORMAL
		NORMAL	
		SHARP	
AE_WIDTH	AE exposure width	FULL	FULL
		PART	

Note

MODE1: High gamma (Improves the image contrast)

MODE2: Normal gamma

STOP:

Reads the density of 3 - 7 mm area from leading edge of document, decides the output image density according to the density of that part. (The output image density is constant at whole area.)

REALTIME:

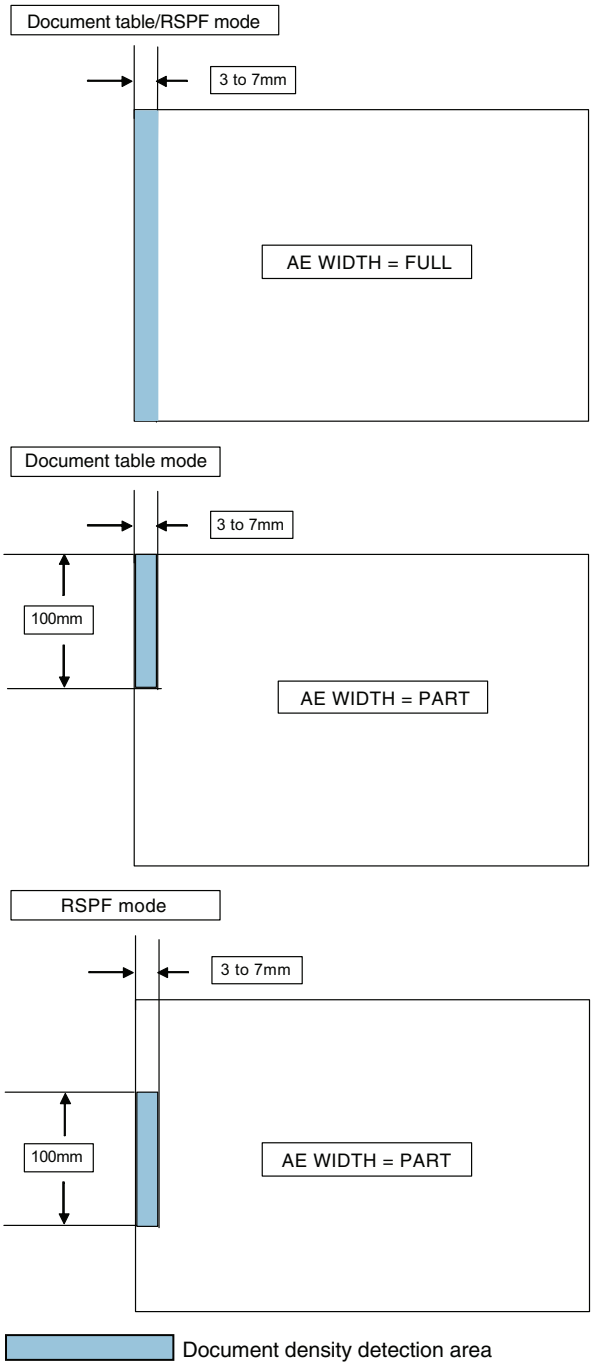
Reads the density of width of the document one by one, decides the output image density according to the density of each part of the document. (The output image density may be not constant at whole area.)

PRESCAN:
Once the densities on the document surface are scanned, the output image density is determined according to the average of the scanned densities. (The output image density is even for all the surface.)

AE WIDTH FULL:
Document density reading area in monochrome auto mode is 3 - 7 mm (leading edge of document) x Document width. No relationship to PRESCAN MODE

AE WIDTH PART:
Document density reading area in monochrome auto mode is 3 - 7 mm (leading edge of document) x 100 mm (width). No relationship to PRESCAN MODE

Operation in monochrome auto copy mode:
When the density of the document of the read area is light, output image density is increased by control. When the density of the document of the read area is dark, output image density is decreased by control.



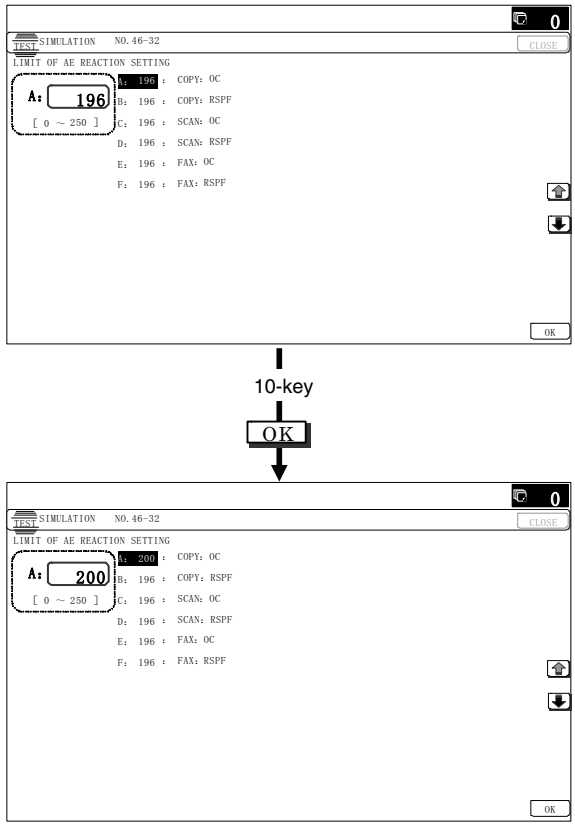
10-D (6) Document low density image density reproduction adjustment in the automatic monochrome (Copy/Scan/FAX) mode (No need to adjust normally) (Background density adjustment in the scanning section)

Use for the reproducibility adjustment of document background density in monochrome auto copy mode.

This adjustment is required in the following cases.

* When there is a desire not to reproduce the background of the document. When there is a desire to reproduce the low density image of the document.
* When there is request from the user.

1) Enter the SIM 46-32 mode.



2) Select the adjustment mode with the scroll key.
3) Enter the adjustment value with 10-key and press [OK] key.
   When the adjustment value is increased, reproducibility of the background and the low density image is increased. When the adjustment value is decreased, reproducibility of the background and the low density image is decreased.

Display/Item		Content	Set value	Default
A	COPY : OC	Copy mode (for OC)	1 - 250	196
B	COPY : RSPF	Copy mode (for RSPF)	1 - 250	196
C	SCAN : OC	Scanner mode (for OC)	1 - 250	196
D	SCAN : RSPF	Scanner mode (for RSPF)	1 - 250	196
E	FAX : OC	FAX mode (for OC)	1 - 250	196
F	FAX : RSPF	FAX mode (for RSPF)	1 - 250	196

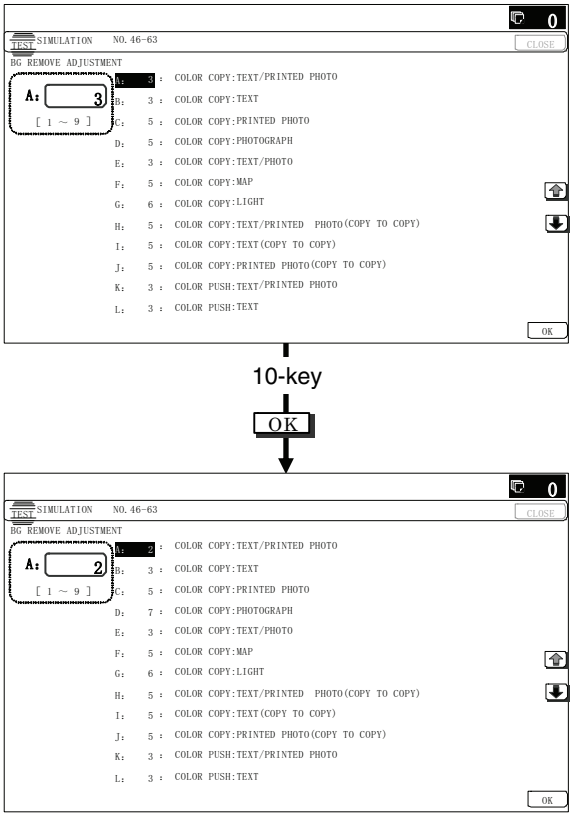
10-D (7) Copy/Scan low density image density adjustment (for each mode) (No need to adjust normally)

This adjustment is used to adjust the image density in the low density area in the copy/scanner mode.

This adjustment is required in the following cases.

* When there is a desire not to reproduce the background of the document. When there is a desire to reproduce the low density image of the document.
* When there is request from the user.

1) Enter the SIM 46-63 mode.


SIMULATION NO. 46-63
CLOSE
BG REMOVE ADJUSTMENT
A: 3
[1 ~ 9]
A: 3 : COLOR COPY:TEXT/PRINTED PHOTO
B: 3 : COLOR COPY:TEXT
C: 5 : COLOR COPY:PRINTED PHOTO
D: 5 : COLOR COPY:PHOTOGRAPH
E: 3 : COLOR COPY:TEXT/PHOTO
F: 5 : COLOR COPY:MAP
G: 6 : COLOR COPY:LIGHT
H: 5 : COLOR COPY:TEXT/PRINTED PHOTO(COPY TO COPY)
I: 5 : COLOR COPY:TEXT(COPY TO COPY)
J: 5 : COLOR COPY:PRINTED PHOTO(COPY TO COPY)
K: 3 : COLOR PUSH:TEXT/PRINTED PHOTO
L: 3 : COLOR PUSH:TEXT
OK
10-key
OK
SIMULATION NO. 46-63
CLOSE
BG REMOVE ADJUSTMENT
A: 2
[1 ~ 9]
A: 2 : COLOR COPY:TEXT/PRINTED PHOTO
B: 3 : COLOR COPY:TEXT
C: 5 : COLOR COPY:PRINTED PHOTO
D: 7 : COLOR COPY:PHOTOGRAPH
E: 3 : COLOR COPY:TEXT/PHOTO
F: 5 : COLOR COPY:MAP
G: 6 : COLOR COPY:LIGHT
H: 5 : COLOR COPY:TEXT/PRINTED PHOTO(COPY TO COPY)
I: 5 : COLOR COPY:TEXT(COPY TO COPY)
J: 5 : COLOR COPY:PRINTED PHOTO(COPY TO COPY)
K: 3 : COLOR PUSH:TEXT/PRINTED PHOTO
L: 3 : COLOR PUSH:TEXT
OK

2) Select the copy mode to be adjusted with the scroll key.

Display/Item		Content	Set value	Default
A	COLOR COPY : TEXT/PRINTED PHOTO	Text print (color copy)	1 - 9	3
B	COLOR COPY : TEXT	Text (color copy)	1 - 9	3
C	COLOR COPY : PRINTED PHOTO	Printed photo (color copy)	1 - 9	5
D	COLOR COPY : PHOTOGRAPH	Photograph (color copy)	1 - 9	5
E	COLOR COPY : TEXT/PHOTO	Text/Photograph (color copy)	1 - 9	3
F	COLOR COPY : MAP	Map (color copy)	1 - 9	5
G	COLOR COPY : LIGHT	Light document (color copy)	1 - 9	6
H	COLOR COPY : TEXT/PRINTED PHOTO (COPY TO COPY)	Copy document, Text print (color copy)	1 - 9	5
I	COLOR COPY : TEXT (COPY TO COPY)	Copy document, Text (color copy)	1 - 9	5
J	COLOR COPY : PRINTED PHOTO (COPY TO COPY)	Copy document, Printed photo (color copy)	1 - 9	5
K	COLOR PUSH:TEXT/ PRINTED PHOTO	Text print (color PUSH)	1 - 9	3
L	COLOR PUSH:TEXT	Text (color PUSH)	1 - 9	3
M	COLOR PUSH: PRINTED PHOTO	Printed photo (color PUSH)	1 - 9	5
N	COLOR PUSH: PHOTOGRAPH	Photograph (color PUSH)	1 - 9	5
O	COLOR PUSH: TEXT/PHOTO	Text/Photograph (color PUSH)	1 - 9	3
P	COLOR PUSH: MAP	Map (color PUSH)	1 - 9	5

3) Enter the adjustment value with 10-key and press [OK] key.

When the adjustment value is increased, reproducibility of the background and the low density image is increased. When the adjustment value is decreased, reproducibility of the background and the low density image is decreased.

10-D (8) Color copy, text, line image reproduction adjustment (edge gamma, density adjustment) (Text, Map mode) (No need to adjust normally)

Adjustment 1

By changing Text/Printed Photo, Text/Photograph, automatic copy mode Text, line image edge section gamma and the density, the reproducibility of text and line profile can be varied optionally.

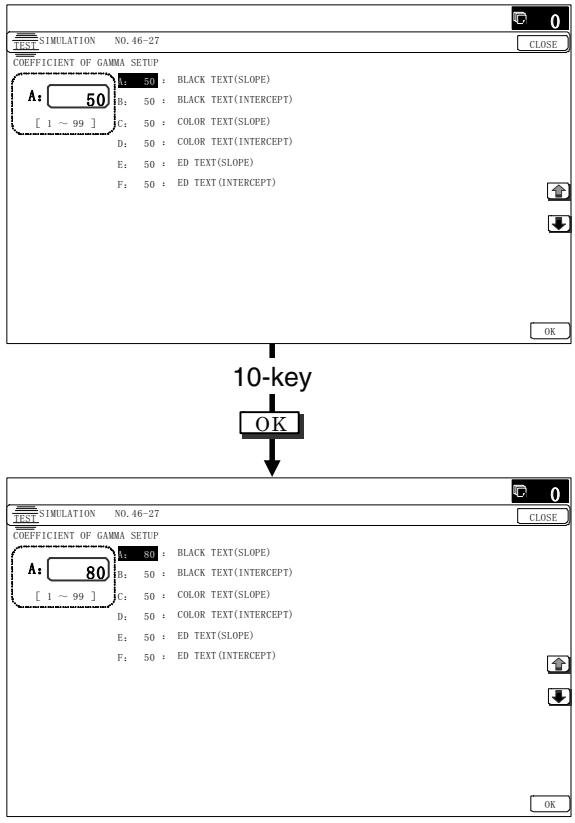
With this adjustment, the density and the thickness of fine text and lines can be varied.

Check the result of this adjustment by text/printed photo copy mode (manual).

This adjustment is required in the following cases.

* When the reproducibility of text and line copy image is to be changed.
* When there is request from the user.

1) Enter the SIM 46-27 mode.



2) Select the mode to be adjusted with the scroll key.

	Display/Item (Copy mode)	Content	Adjustment range	Default
A	BLACK TEXT (SLOPE)*1	Black character edge gamma skew adjustment	1 - 99	50
B	BLACK TEXT (INTERCEPT)*1	Black character edge density adjustment	1 - 99	50
C	COLOR TEXT (SLOPE)*1	Color character edge gamma skew adjustment	1 - 99	50
D	COLOR TEXT (INTERCEPT)*1	Color character edge density adjustment	1 - 99	50
E	ED TEXT (SLOPE)	Text/Map mode gamma adjustment (Text/Map mode)	1 - 99	50
F	ED TEXT (INTERCEPT)	Text/Map mode density adjustment (Text/Map mode)	1 - 99	50

*1: 20cpm machine: Disable without HDD.

3) Enter the adjustment value with 10-key.

When the adjustment values of item A and C are changed, the gamma at the line edge section is changed.

When the adjustment value is increased, the image contrast of character edge and line edge is increased. When the adjustment value is decreased, the image contrast of character and line edge is decreased.

When the adjustment value of the adjustment item B and D are increased, the image density at the line edge section is increased, and vice versa.

4) Press [OK] key.

5) Make a copy in monochrome text/printed photo copy mode (manual), check the copy.

When checking, use a copy of the document with a thin character and line image.

If a satisfactory result is not obtained, return to the SIM 46-27 mode and change the adjustment value.

Repeat the above procedures until a satisfactory result is obtained.

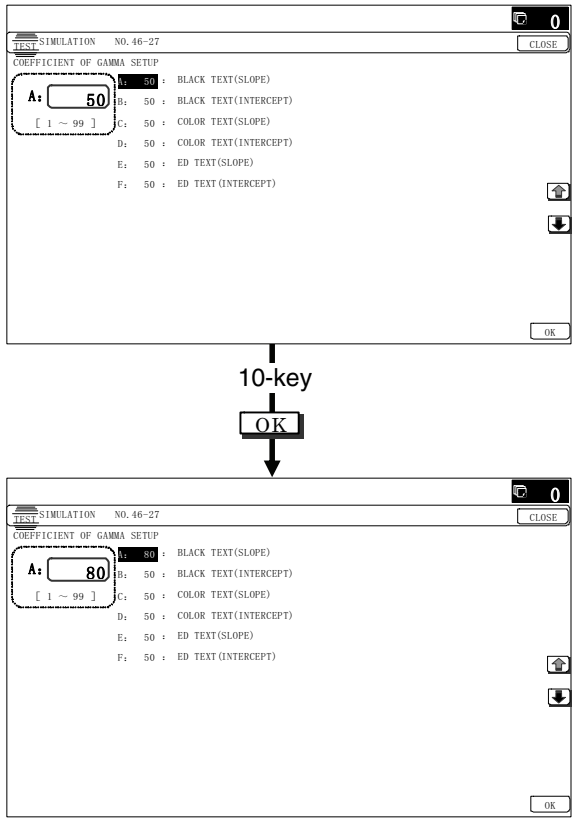
Adjustment 2

This adjustment is used to change the gamma and the density in the Text/Map copy mode.

This adjustment is required in the following cases.

* To change the contrast and the density of the Text/Map copy mode images.
* When there is request from the user.

1) Enter the SIM 46-27 mode.



2) Select the mode to be adjusted with the scroll key.

	Display/Item (Copy mode)	Content	Adjustment range	Default
A	BLACK TEXT (SLOPE)*1	Black character edge gamma skew adjustment	1 - 99	50
B	BLACK TEXT (INTERCEPT)*1	Black character edge density adjustment	1 - 99	50
C	COLOR TEXT (SLOPE)*1	Color character edge gamma skew adjustment	1 - 99	50
D	COLOR TEXT (INTERCEPT)*1	Color character edge density adjustment	1 - 99	50
E	ED TEXT (SLOPE)	Text/Map mode gamma adjustment (Text/Map mode)	1 - 99	50
F	ED TEXT (INTERCEPT)	Text/Map mode density adjustment (Text/Map mode)	1 - 99	50

*1: 20cpm machine: Disable without HDD.

3) Enter the adjustment value with 10-key.

When the adjustment value of the adjustment item E is changed, the gamma (contrast) is changed.

When the adjustment value is increased, the contrast is increased, and vice versa.

When the adjustment value of the adjustment item F is increased, the image density is increased, and vice versa.

4) Press [OK] key.

5) Make a copy in the Text/Map copy mode (manual), and check the output print.

If a satisfactory result is not obtained, use SIM46-27 to change the adjustment value.

Repeat the above procedures until a satisfactory result is obtained.

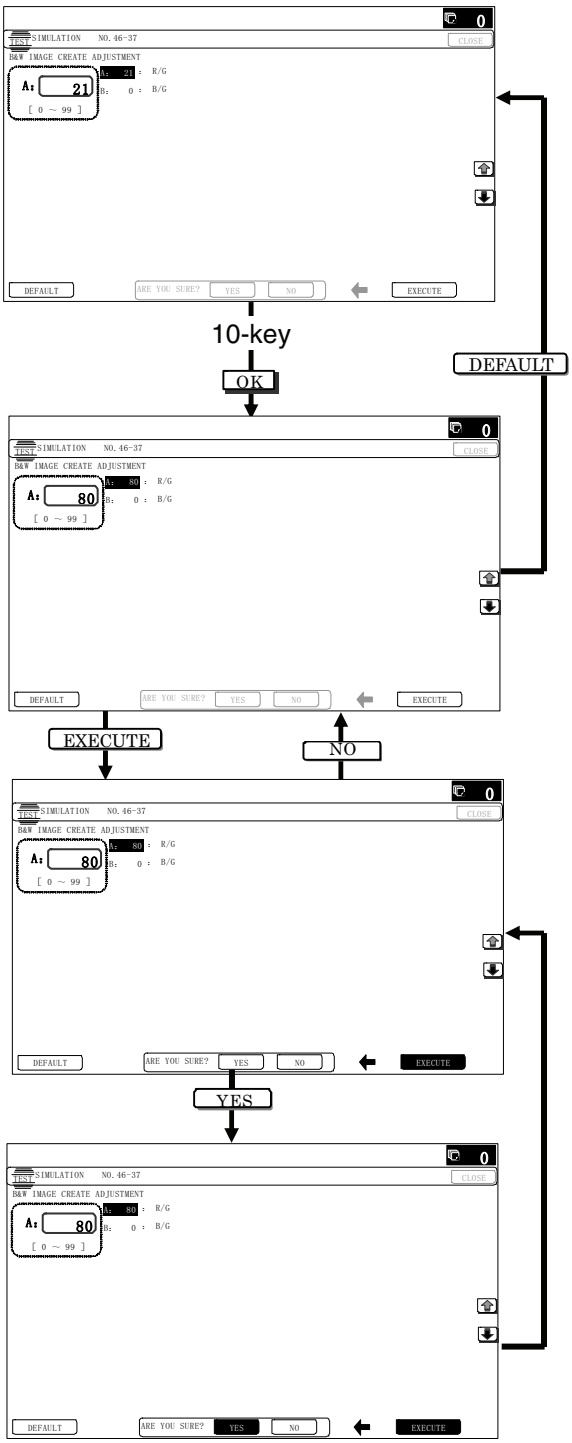
10-D (9) Monochrome (Copy/Scan/FAX) mode color document reproduction adjustment (No need to adjust normally)

Use to adjust the reproducibility for the red image and the yellow image when printing color document that included the red/yellow image in monochrome copy mode.

This adjustment is required in the following cases.

* When there is desire to change reproducibility of yellow/red image in case of making a color copy of the color document in monochrome copy mode.
* When there is request from the user.

1) Enter the SIM 46-37 mode.



2) Select the mode to be adjusted with the scroll key.

Display/Item (Copy mode)		Content	Adjustment range	Default
A	R/G	Gray making setting (R/G)	0 - 99	21
B	B/G	Gray making setting (B/G)	0 - 99	0

3) Enter the adjustment value with 10-key.

When the adjustment value of adjustment item A is increased, copy density of red image is decreased. When the adjustment value is decreased, copy density of red image is increased.

When the adjustment value of adjustment item B is increased, copy density of red image is increased. When the adjustment value is decreased, copy density of red image is decreased.

4) Press [OK] key.

5) Make a copy in monochrome text/printed photo copy mode (manual), check the copy.

If a satisfactory result is not obtained, return to the SIM 46-37 mode and change the adjustment value.

Repeat the above procedures until a satisfactory result is obtained.

10-D (10) Color copy mode dark area gradation (black component quantity) adjustment (No need to adjust normally)

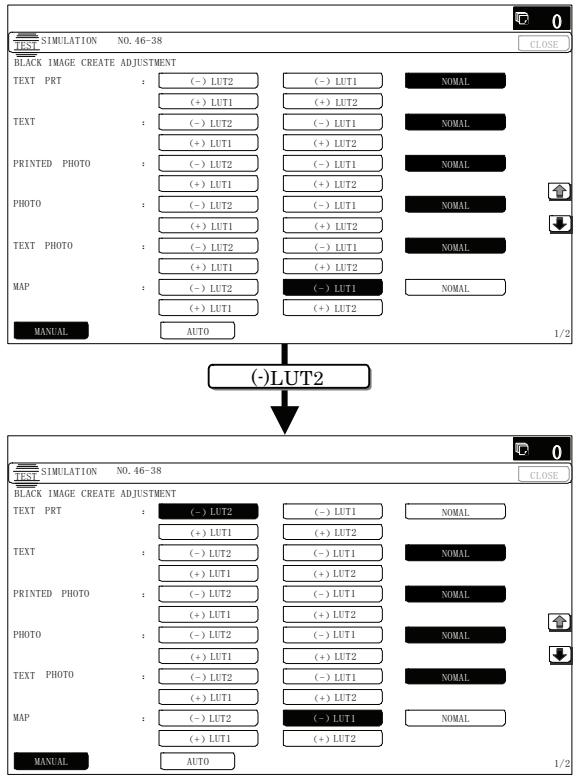
Use to adjust the black ingredient amount in the color copy mode. (except character and line image)

As a result of this adjustment, the gradation of the shade part changes.

This adjustment is required in the following cases.

* When reproduction as solid of black image is required.
* To make the black background and the dark area darker
* When change of gradation of the shade part is required.
* When there is request from the user.

1) Enter the SIM 46-38 mode.



2) Select the AUTO MODE or the MANUAL MODE with the mode key.
3) Select the mode to be adjusted with the scroll key.

Display/Item (Copy mode)		Select button	Content	Default
MANUAL	TEXT PRT	(-) LUT2	Text print (Manual)	NORMAL
		(-) LUT1		
		NOMAL		
		(+) LUT1		
		(+) LUT2		
	TEXT	(-) LUT2	Text (Manual)	NORMAL
		(-) LUT1		
		NOMAL		
		(+) LUT1		
		(+) LUT2		
	PRINTED PHOTO	(-) LUT2	Printed photo (Manual)	NORMAL
		(-) LUT1		
		NOMAL		
		(+) LUT1		
		(+) LUT2		
	PHOTO	(-) LUT2	Photograph (Manual)	NORMAL
		(-) LUT1		
		NOMAL		
		(+) LUT1		
		(+) LUT2		
	TEXT PHOTO	(-) LUT2	Text/ Photograph (Manual)	NORMAL
		(-) LUT1		
		NOMAL		
		(+) LUT1		
		(+) LUT2		
	MAP	(-) LUT2	Map (Manual)	(+) LUT1
		(-) LUT1		
		NOMAL		
		(+) LUT1		
		(+) LUT2		
	CP ORG/ TEXT PRT	(-) LUT2	Copy document/ Text printed (Manual)	NORMAL
		(-) LUT1		
		NOMAL		
		(+) LUT1		
		(+) LUT2		
	COPY ORG/ TEXT	(-) LUT2	Copy document/ Text (Manual)	NORMAL
		(-) LUT1		
		NOMAL		
		(+) LUT1		
		(+) LUT2		
	COPY ORG/ PHOTO	(-) LUT2	Copy document/ Printed photo (Manual)	NORMAL
		(-) LUT1		
		NOMAL		
		(+) LUT1		
		(+) LUT2		
	LIGHT ORIGINAL	(-) LUT2	Light document (Manual)	(+) LUT1
		(-) LUT1		
		NOMAL		
		(+) LUT1		
		(+) LUT2		

Display/Item (Copy mode)		Select button	Content	Default
AUTO	AUTO0	(-) LUT2	Auto mode judgment 0	NORMAL
		(-) LUT1		
		NOMAL		
		(+) LUT1		
		(+) LUT2		
	AUTO1	(-) LUT2	Auto mode judgment 1	NORMAL
		(-) LUT1		
		NOMAL		
		(+) LUT1		
		(+) LUT2		
	AUTO2	(-) LUT2	Auto mode judgment 2	NORMAL
		(-) LUT1		
		NOMAL		
		(+) LUT1		
		(+) LUT2		
	AUTO3	(-) LUT2	Auto mode judgment 3	NORMAL
		(-) LUT1		
		NOMAL		
		(+) LUT1		
		(+) LUT2		
	AUTO4	(-) LUT2	Auto mode judgment 4	NORMAL
		(-) LUT1		
		NOMAL		
		(+) LUT1		
		(+) LUT2		
	AUTO5	(-) LUT2	Auto mode judgment 5	NORMAL
		(-) LUT1		
		NOMAL		
		(+) LUT1		
		(+) LUT2		
	AUTO6	(-) LUT2	Auto mode judgment 6	NORMAL
		(-) LUT1		
		NOMAL		
		(+) LUT1		
		(+) LUT2		

4) Press the black ingredient amount select button.
   When reproduction as solid of black image is required:
   Selects + button
   When there is desire to darken copy of black image:
   Selects + button
   When a dark color image is reproduced in the black:
   Selects - button
5) Make a copy in color copy mode and check the copy.

If a satisfactory result is not obtained, return to the SIM 46-38 mode and change the adjustment value.

Repeat the above procedures until a satisfactory result is obtained.

10-D (11) Color (Copy/Scan) mode sharpness adjustment (No need to adjust normally)

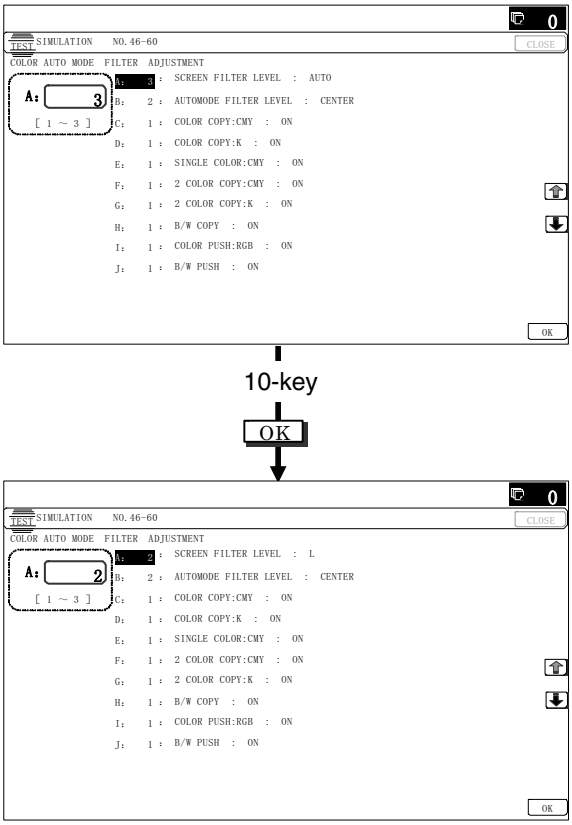
Use for sharpness adjustment of the high density image in color copy mode.

This adjustment changes smoothness (asperity) in the image shade part.

This adjustment is required in the following cases.

* When changing the sharpness of copy image in copy mode. (obtain crispy image) (decreases moire)
* When there is desire to improving smoothness in the image shade part (for decrease of asperity)
* To make the black background and the dark area darker.
* To reproduce the gradation change in the dark area.
* When there is request from the user.

1) Enter the SIM 46-60 mode.


SIMULATION NO. 46-60
CLOSE
COLOR AUTO MODE FILTER ADJUSTMENT
A: 3
[1 ~ 3]
A: 3 : SCREEN FILTER LEVEL : AUTO
B: 2 : AUTOMODE FILTER LEVEL : CENTER
C: 1 : COLOR COPY:CMY : ON
D: 1 : COLOR COPY:K : ON
E: 1 : SINGLE COLOR:CMY : ON
F: 1 : 2 COLOR COPY:CMY : ON
G: 1 : 2 COLOR COPY:K : ON
H: 1 : B/W COPY : ON
I: 1 : COLOR PUSH:RGB : ON
J: 1 : B/W PUSH : ON
OK
10-key
OK
SIMULATION NO. 46-60
CLOSE
COLOR AUTO MODE FILTER ADJUSTMENT
A: 2
[1 ~ 3]
A: 2 : SCREEN FILTER LEVEL : L
B: 2 : AUTOMODE FILTER LEVEL : CENTER
C: 1 : COLOR COPY:CMY : ON
D: 1 : COLOR COPY:K : ON
E: 1 : SINGLE COLOR:CMY : ON
F: 1 : 2 COLOR COPY:CMY : ON
G: 1 : 2 COLOR COPY:K : ON
H: 1 : B/W COPY : ON
I: 1 : COLOR PUSH:RGB : ON
J: 1 : B/W PUSH : ON
OK

2) Select the mode to be adjusted with the scroll key.

Display/Item			Content		Setting range	Default	NOTE
A	SCREEN FILTER LEVEL	H	Sharpness (filter) adjustment of dot pattern image in auto copy mode	Strong emphasis	1	3 (Auto)	Apply to auto copy mode only
		L		Soft emphasis	2		
		AUTO		Auto	3		
B	AUTOMODE FILTER LEVEL	SOFT	Sharpness (filter) adjustment for the auto copy mode	SOFT	1	2 (CENTER)	
		CENTER		CENTER	2		
		HIGH		HIGH	3		
C	COLOR COPY: CMY	OFF	Soft filter applying setting to C, M, Y image in color copy mode	OFF	0	1 (ON)	Available for the high density image except text and line image When setting ON, smoothness in the image shade part improves by applying soft filter. (asperity decreases)
		ON		ON	1		
D	COLOR COPY:K	OFF	Soft filter applying setting to K image in color copy mode	OFF	0	1 (ON)	
		ON		ON	1		
E	SINGLE COLOD: CMY	OFF	Soft filter applying setting to C, M, Y image in single color copy mode	OFF	0	1 (ON)	
		ON		ON	1		
F	2 COLOR COPY: CMY	OFF	Soft filter applying setting to C, M, Y image in 2-color copy mode	OFF	0	1 (ON)	
		ON		ON	1		
G	2 COLOR COPY: K	OFF	Soft filter applying setting to K image in color copy mode	OFF	0	1 (ON)	
		ON		ON	1		
H	B/W COPY	OFF	Soft filter applying setting in monochrome copy mode	OFF	0	1 (ON)	
		ON		ON	1		
I	COLOR PUSH: RGB	OFF	Soft filter applying setting to image in push scan color mode	OFF	0	1 (ON)	
		ON		ON	1		
J	B/W PUSH	OFF	Soft filter applying setting to image in push scan monochrome mode	OFF	0	1(ON)	
		ON		ON	1		

3) Input numeric value corresponding to sharpness level (filter process mode).
   - Adjustment item A:
     When selecting AUTO, filter is selected according to dot pattern state automatically and adjusts sharpness.
     Input small numeric value to obtain crispy image. Input large numeric value to decrease moire.
   - Adjustment item B:
     Select HIGH to obtain clear images. Select SOFT to reduce moire.
   - Adjustment item C - J:
     When setting ON, smoothness in the image shade part improves by applying soft filter. (asperity decreases)
4) Press [OK] key.
5) Make a copy and check the copy image.

If a satisfactory result is not obtained, return to the SIM 46-60 mode and change the adjustment value.

Repeat the above procedures until a satisfactory result is obtained.

10-D (12) Copy high density image density reproduction setting (Normally unnecessary to the setting change)

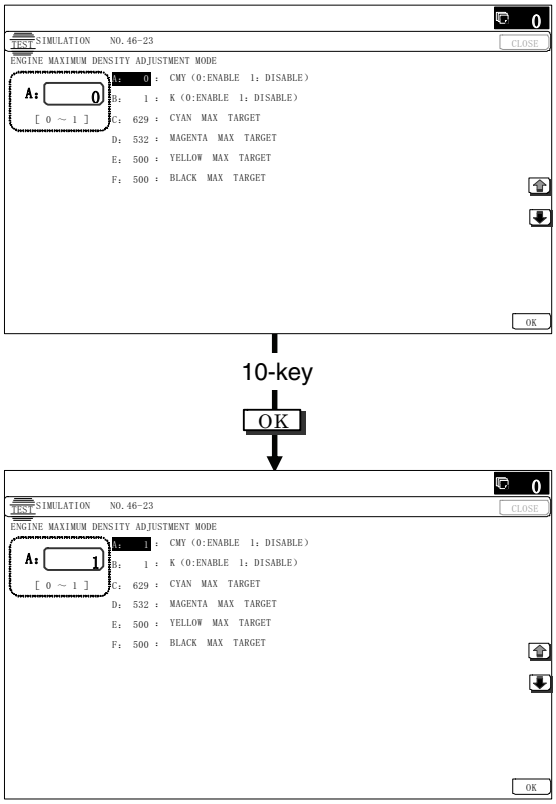
If a tone gap occurs on part of high density in copy mode, or if there is necessity to increase the density of the part of high density, change the setting.

This setting is normally not required. When, however, there are case of following, change the setting.

* When a tone gap occurs on part of high density.
* When there is a necessity to increase the density of the part of high density.
* When there is request from the user.

a. Adjustment procedure

1) Enter the SIM 46-23 mode.


SIMULATION NO.46-23
CLOSE
ENGINE MAXIMUM DENSITY ADJUSTMENT MODE
A: 0
[0 ~ 1]
A: 0 : CMY (0:ENABLE 1: DISABLE)
B: 1 : K (0:ENABLE 1: DISABLE)
C: 629 : CYAN MAX TARGET
D: 532 : MAGENTA MAX TARGET
E: 500 : YELLOW MAX TARGET
F: 500 : BLACK MAX TARGET
OK
10-key
OK
SIMULATION NO.46-23
CLOSE
ENGINE MAXIMUM DENSITY ADJUSTMENT MODE
A: 1
[0 ~ 1]
A: 1 : CMY (0:ENABLE 1: DISABLE)
B: 1 : K (0:ENABLE 1: DISABLE)
C: 629 : CYAN MAX TARGET
D: 532 : MAGENTA MAX TARGET
E: 500 : YELLOW MAX TARGET
F: 500 : BLACK MAX TARGET
OK

2) Select the item A, B with the scroll key.

Display/Item		Content		Setting range	Default
A	CMY (0:ENABLE 1:DISABLE)	0	CMY engine maximum density correction mode Enable	0 - 1	0
		1	CMY engine maximum density correction mode Disable		
B	K (0: ENABLE 1: DISABLE)	0	K engine maximum density correction mode Enable	0 - 1	1
		1	K engine maximum density correction mode DIsable		
C	CYAN MAX TARGET	Scanner target value for CYAN maximum density correction		0 - 999	500
D	MAGENTA MAX TARGET	Scanner target value for MAGENTA maximum density correction		0 - 999	500
E	YELLOW MAX TARGET	Scanner target value for YELLOW maximum density correction		0 - 999	500
F	BLACK MAX TARGET	Scanner target value for BLACK maximum density correction		0 - 999	500

* If a tone gap occurs on part of high density, set 0 to item A and B
  The density of high density part decreases. However, the tone gap is better.
* In case of more increase of the density on high density part, set 1 to item A and B.
  The tone gap may occur in high density part.

Important

Do not change the setting values of item C, D, E and F. If these values are changed, density of the high density part is changed.

If these values are changed, be sure to execute the copy color balance density adjustment. (Auto adjustment)

10-D (13) Copy color balance adjustment (Single color copy mode) (No need to adjust normally)

This adjustment is used to set the color balance and the density in the single color copy mode to the user's request.

The adjustment is made by changing Y, M, C components of each color.

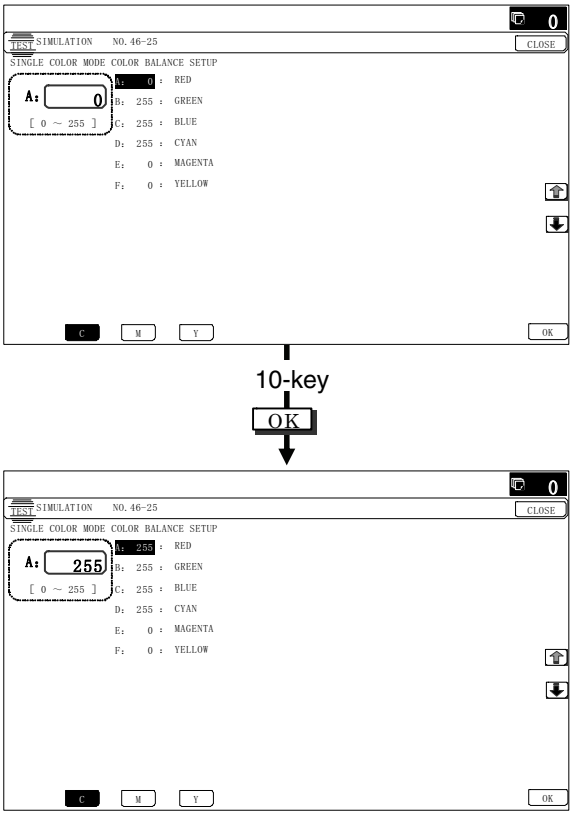
This adjustment is not required normally, but executed when there is a request from the user.

When the default adjustment value is changed, this adjustment is required in the following cases.

* When it is required to change the color balance in the single color copy mode.
* When there is request from the user.

a. Adjustment procedure

1) Enter the SIM 46-25 mode.



2) Select the color to be adjusted with the scroll key.
3) Select the color (YMC) to be adjusted with the color key.
4) Enter the adjustment value with 10-key.

Display/Item		Adjustment range	Default		
			C	M	Y
A	RED	0 - 255	0	255	200
B	GREEN	0 - 255	255	0	255
C	BLUE	0 - 255	255	200	0
D	YELLOW	0 - 255	0	0	255
E	MAGENTA	0 - 255	0	255	0
F	CYAN	0 - 255	255	0	0

5) Press [OK] key.
6) Make a copy in the single color copy mode and check the copy.

If a satisfactory result is not obtained, return to the SIM 46-25 mode and change the adjustment value.

Repeat the above procedures until a satisfactory result is obtained.

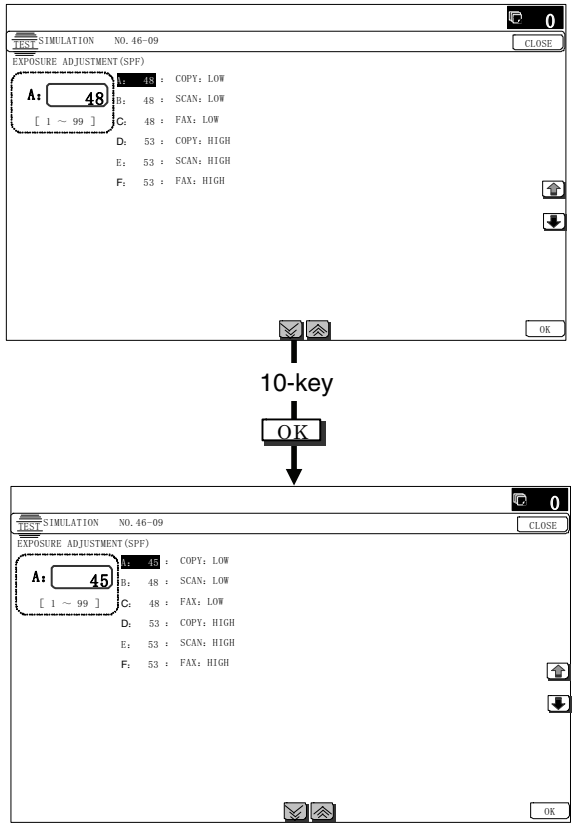
10-D (14) RSPF mode (Copy/Scan/FAX) density adjustment (No need to adjust normally)

This setting is normally not required, however, in the following cases, make changes to the setting:

* When copy in RSPF mode differs from copy in document table mode.
* When copy density in RSPF mode is low or too high.
* When the RSPF unit is replaced.
* When the RSPF unit is disassembled.
* The CCD unit has been replaced.
* U2 trouble has occurred.
* When the MFP PWB is replaced.
* When the EEPROM on the MFP PWB is replaced.

a. Adjustment procedure

1) Enter the SIM 46-9 mode.



2) Select the mode to be adjusted with the scroll key.
When adjusting density on low density part, select "A (COPY LOW)". When adjusting density on high density part, select "D (COPY HIGH)".

Item/Display		Content	Setting range	Default
A	COPY : LOW	RSPF copy mode exposure adjustment (Low density side)	1 - 99	48
B	SCAN : LOW	RSPF scanner mode exposure adjustment (Low density side)	1 - 99	48
C	FAX : LOW	PSPF FAX mode exposure adjustment (Low density side)	1 - 99	48
D	COPY : HIGH	RSPF copy mode exposure adjustment (High density side)	1 - 99	53
E	SCAN : HIGH	RSPF scanner mode exposure adjustment (Low density side)	1 - 99	53
F	FAX : HIGH	RSPF FAX mode exposure adjustment (High density side)	1 - 99	53

3) Enter the adjustment value with 10-key.

In case of increase of image density, input large numeric value. Or in case of diluting the image density, input small numeric value.

4) Press [OK] key.

5) Make a copy in the RSPF mode and check the copy.

If a satisfactory result is not obtained, return to the SIM 46-9 mode and change the adjustment value.

Repeat the above procedures until a satisfactory result is obtained.

10-D (15) Automatic color balance adjustment by the user (Copy color balance automatic adjustment ENABLE setting and adjustment)

a. General

In the user program mode, the user can execute the auto color calibration (auto adjustment of the copy color balance and density).

This adjustment is to set Enable/Disable of the above user operation with SIM 26-53.

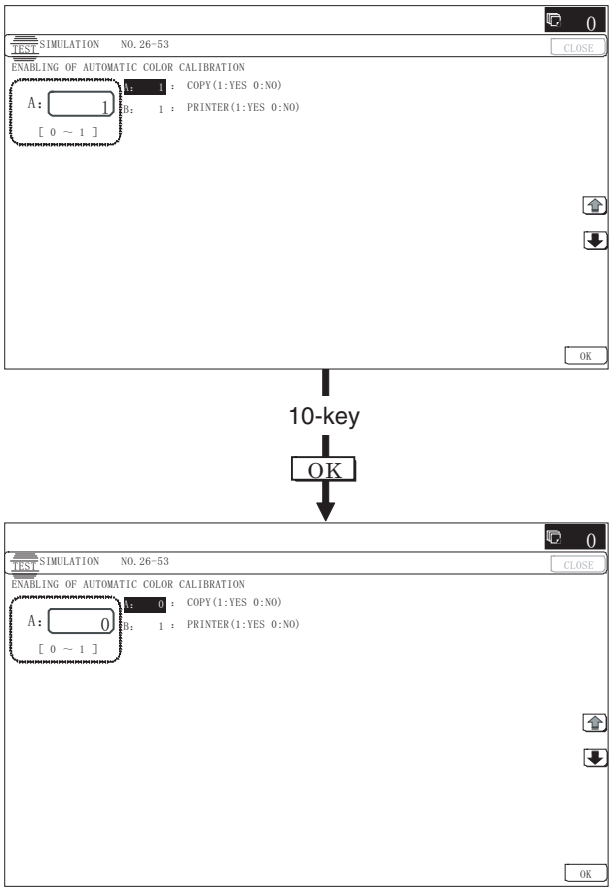
Important

This setting must be set to ENABLE only when the user's understanding on the automatic adjustment of the copy color balance and density and the user's operational ability are judged adequate enough to execute the adjustment.

When set to enable, operation procedures must be fully explained to the user.

b. Setting procedure

1) Enter the SIM 26-53 mode.



2) Select ENABLE or DISABLE with 10-key.

When disabling, set to "0" (NO). When enabling, set to "1" (Yes).

3) Press [OK] key.

When set to DISABLE, the menu of the user auto color calibration (automatic adjustment of copy color balance and density) is not displayed in the user program mode.

(Auto color calibration by the user (Auto color balance adjustment))

Important

This adjustment is based on the service target color balance set with SIM 63-7 and SIM 63-8. If, therefore, the above settings are not properly performed, this adjustment cannot be made properly.

1) Enter the system setting mode.

2) Enter the copy setting mode.

3) Press the auto color calibration key.

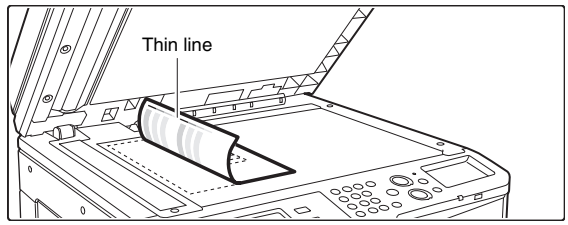
4) Press [EXECUTE] key.

The color patch image (adjustment pattern) is printed out.

5) Set the color patch image (adjustment pattern) printed in procedure 4) on the document table.

Set the patch image so that the thin line is on the left side as shown in the figure.

At that time, place 5 sheets of white paper on the above color patch image (adjustment pattern).



6) Press [EXECUTE] key, and the copy color balance adjustment is executed automatically. After completion of the adjustment, the display returns to the original operation screen.

For the 26cpm/36cpm/31cpm(A) machines, the message, "Will you go on to the printer color balance adjustment?" is displayed.
To execute the printer color balance adjustment successively, perform the procedures same as the above.

10-D (16) Copy gamma, color balance adjustment for each dither (Automatic adjustment)

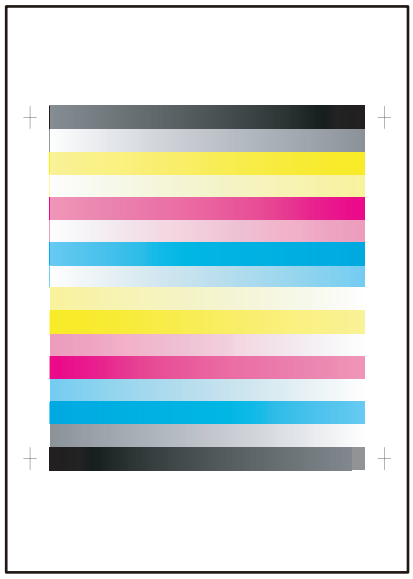
a. General

This simulation is used to improve the image quality in a certain mode. (Refer to the list in procedure 6.)

b. Adjustment procedures

1) Enter the SIM46-54 mode.
2) Press [EXECUTE] key.

   A4/11" x 8.5" or A3/11" x 17" paper is automatically selected. The color patch image (adjustment pattern) is printed.
3) Set the patch image (adjustment pattern) printed in the procedure 2) on the document table so that the thin lines on the printed patch image (adjustment pattern) are on the left side. Place 5 sheets of white paper on the printed patch image (adjustment pattern).



4) Press [EXECUTE] key.

   The color balance and the density are automatically adjusted.

   The adjustment pattern is printed out. Check it for any abnormality.
5) Press [OK] key.

   The list of the adjustment items (for each dither) is displayed.
6) Select an adjustment item (for each dither).

Select item (Mode/Image)	Content	NOTE
Heavy Paper*1	Adjustment item to improve the color balance in the heavy paper mode	20cpm machine: Disable without HDD.
Black Edge	Adjustment item (K) to improve the reproduction of lines, text density, and thickness	
Color Edge	Adjustment item (Color) to improve the reproduction of lines, text density, and thickness	
B/W	Adjustment item to improve the density and gradation in the monochrome text mode and the map mode.	20cpm machine: Reflected in all the modes.
Color Ed	Adjustment item to improve the color balance in the text mode and the map mode.	
B/W 600dpi	Adjustment item to improve the density and gradation in the monochrome printed photo mode and the photography mode.	20cpm machine: Disable without HDD.
WOVEN1*2	Adjustment item when adjusting the watermark density in the watermark mode 1	20cpm/23cpm/ 31cpm(G) machine: Disable
WOVEN2*2	Adjustment item when adjusting the watermark density in the watermark mode 2	
WOVEN3*2	Adjustment item when adjusting the watermark density in the watermark mode 3	
WOVEN4*2	Adjustment item when adjusting the watermark density in the watermark mode 4	

*1: When performing adjustments in the heavy paper mode, load paper in the manual paper feed tray.

*2: 23cpm/31cpm(G) machine: Disable

7) Press [EXECUTE] key.

   A4/11" x 8.5" or A3/11" x 17" paper is automatically selected.

   The patch image (adjustment pattern) is printed out.

   In the monochrome mode, only the monochrome pattern is printed.
8) Set the patch image (adjustment pattern) printed in the procedure 7) on the document table so that the thin lines on the printed patch image (adjustment pattern) are on the left side. Place 5 sheets of white paper on the printed patch image (adjustment pattern).

9) Press [EXECUTE] key.

   The color balance and the density are automatically adjusted, and the machine goes to the state of procedure 6).

   To complete the adjustment and enable the adjustment result, press [OK] key.
10) Make a copy, and check the copy image quality.

    (Refer to the item of the printer color balance and density check.)

Note

Use SIM46-52 to reset the adjustment values to the default values.

10-D (17)
Dropout color adjustment (Normally not required.) (26cpm/36cpm/31cpm(A) machine)

General (Purpose):

This adjustment is used to adjust the range of reproduction of color document images as monochrome images in the image send mode (monochrome manual text mode).

In other words, it is used to adjust the level of chroma of color images which are reproduced as monochrome images.

This adjustment must be performed in the following cases:

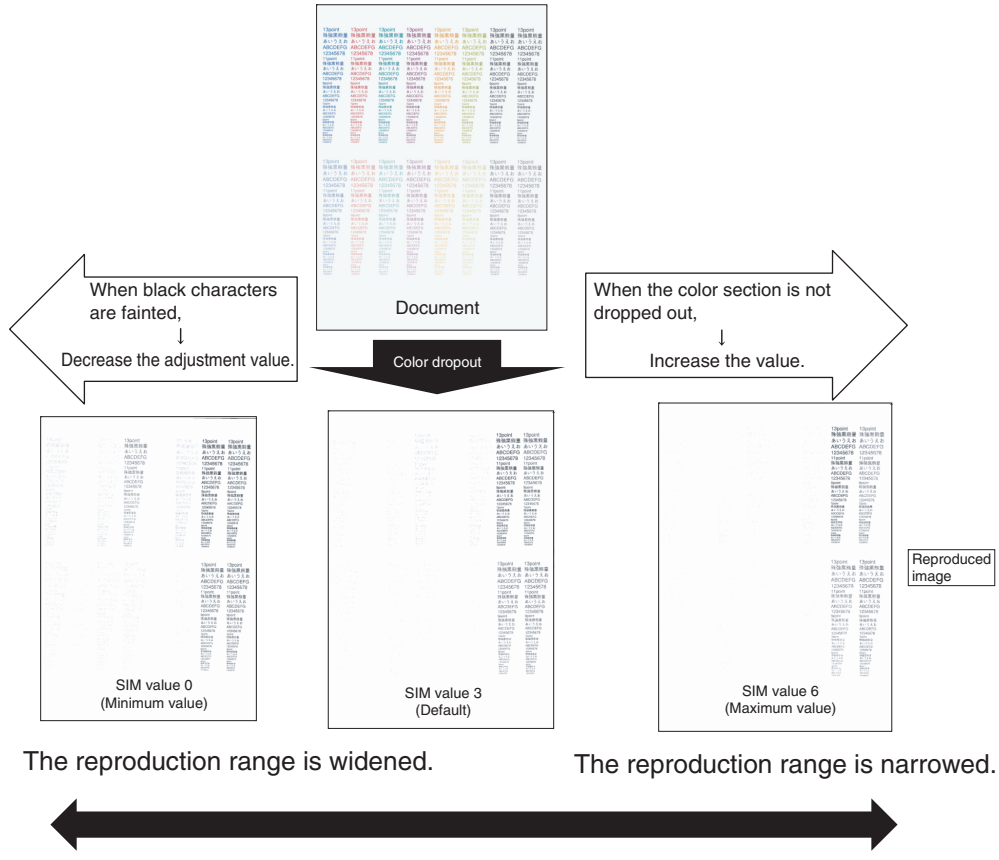
* When there is request from the user.

1) Enter the SIM 46-55 mode.
2) Enter the adjustment value with 10-key and press [OK] key.

   When the adjustment value is increased, colors dropout becomes easy to narrow the reproduction range. When the adjustment value is decreased, color dropout becomes difficult to widen the reproduction range.

Item/Display		Content	Setting range	Default value
A	CHROMA	Dropout color range adjustment	0 - 6	3

3) Scan the document in the image send mode (monochrome manual text mode) and check the adjustment result.



Effect and adverse effect when decreasing the value

[Effect]

When black characters are fainted by color shift, etc, the black area is outputted clearly.

[Adverse effect]

Dropout of color sections becomes difficult.

Effect and adverse effect when increasing the value

[Effect]

Colors (of low chroma) which are difficult to be dropped out can be dropped out.

[Adverse effect]

Black characters are fainted or cracked.

10-D (18) Watermark adjustment (Normally not required) (26cpm/36cpm/31cpm(A) machine)

General (Purpose):

This adjustment is used to adjust the reproduction capability of the watermark in the copy/printer mode.

This adjustment is used for watermark documents (primary output). The result of this adjustment affects the result of watermark print (secondary output).

In the printer mode, the watermark density can be adjusted by the printer driver. That adjustment is based on the result of this adjustment.

This adjustment must be performed in the following cases:

* When there is request from the user. (When a satisfactory result is not obtained from the adjustment in the system setting mode.)
* When there is request from the user. (When a satisfactory result is not obtained from the adjustment with the printer driver.)

1) Enter the SIM 46-66 mode.
2) Select the PATTERN mode, then select an adjustment item in the following list according to the situation.

Note

Normally there is no need to adjust the PATTERN mode (items K and L), the COPY MODE, and the POSITION mode.

Item/Display		Content	Setting range	Default value	Description	NOTE
A	WOVEN DEN BK LOW	Watermark density level (Color: Black / Adjustment for light images)	0 - 255	15	The adjustment value is changed to increase or decrease the density of the watermark of background documents (primary output). To increase the watermark density, increase the adjustment value. To decrease the watermark density, decrease the adjustment value. Important When the adjustment value is increased, the watermark area which is originally not reproduced becomes difficult to disappear. When the adjustment value is decreased, the watermark area which is originally reproduced becomes easy to disappear.	
B	WOVEN DEN BK MIDDLE	Watermark density level (Color: Black, Density: Standard)	0 - 255	19		
C	WOVEN DEN BK HIGH	Watermark density level (Color: Black, Density: Dark)	0 - 255	23		
D	WOVEN DEN C LOW	Watermark density level (Color: Cyan / Adjustment for light images)	0 - 255	19		
E	WOVEN DEN C MIDDLE	Watermark density level (Color: Cyan, Density: Standard)	0 - 255	23		
F	WOVEN DEN C HIGH	Watermark density level (Color: Cyan, Density: Dark)	0 - 255	27		
G	WOVEN DEN M LOW	Watermark density level (Color: Magenta / Adjustment for light images)	0 - 255	15		
H	WOVEN DEN M MIDDLE	Watermark density level (Color: Magenta, Density: Standard)	0 - 255	18		
I	WOVEN DEN M HIGH	Watermark density level (Color: Magenta, Density: Dark)	0 - 255	21		
J	CONTRAST	Contrast adjustment	0 - 255	2	This is used to adjust the variation in the watermark density when the adjustment value of the watermark print/contrast adjustment in the system setting is changed by 1. When this value is increased, the variation is also increased. When the value is decreased, the variation is also decreased. When the adjustment value is 0, the result of the contrast adjustment is not reflected. (* The adjustment value must be set to 1 or greater.)	
K	HT TYPE (POSI)	For half-tone index watermark type positive	42 - 43	42	To reproduce the containing characters of watermark copy (secondary output) more clearly, set to 43. In that case, however, the containing characters of the watermark document (primary output) can be easily reproduced.	Normally set to the default.
L	HT TYPE (NEGA)	For half-tone index watermark type negative	42 - 43	42	To reproduce the containing characters of watermark copy (secondary output) more clearly, set to 43. In that case, however, the containing characters of the watermark document (primary output) can be easily reproduced.	

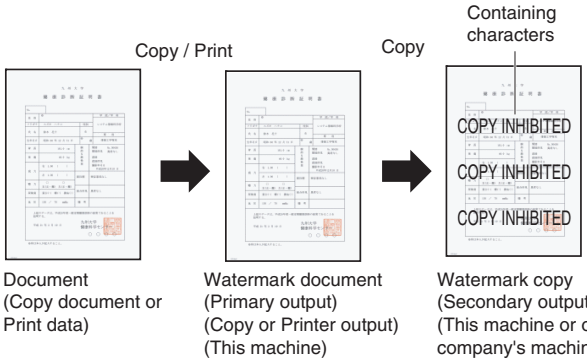
Changing adjustment values of adjustment items A - I and trade off

Kinds of watermarks (Mode selected in the watermark copy mode)	Density value	Adjustment values of adjustment items A - I	Effect
Characters appearing.	Decrease.	The adjustment value is decreased.	The watermark images become easy to disappear. The containing characters become lighter.
	Increase.	The adjustment value is increased.	The containing characters become darker. The watermark images become difficult to disappear.
Background appearing.	Decrease.	The adjustment value is decreased.	The containing characters become easy to disappear. The watermark images become easy to disappear.
	Increase.	The adjustment value is increased.	The watermark images become darker. The containing characters become difficult to disappear.

3) Enter the adjustment value with 10-key and press [OK] key.

4) Make a copy, and check the adjustment result.

Descriptions on the watermark


Copy / Print
Copy
Containing characters
COPY INHIBITED
COPY INHIBITED
COPY INHIBITED
Document (Copy document or Print data)
Watermark document (Primary output) (Copy or Printer output) (This machine)
Watermark copy (Secondary output) (This machine or other company's machine)

Watermark color	The watermark color is available in Cyan, Magenta, and Black.
Containing characters	Characters embedded in a watermark, such as "COPY INHIBITED," are called containing characters.
Kinds of watermarks	There are two kinds: "Character appearing" and "Background appearing." When a watermark of "Character appearing" is copied, the background disappears and the containing characters appear. When a watermark of "Background appearing" is copied, the watermark of the character area disappears and the containing characters become outline characters.
Principle of watermarks	A watermark is composed of two dots: fine dots and rough dots. Since fine dots disappear when copied, they are called disappearing patterns. Since rough dots remain when copied, they are called remaining patterns. In a watermark of "Character appearing," the background is a disappearing pattern and the containing characters are remaining patterns. In a watermark of "Background appearing," the background is a remaining pattern and the containing characters are disappearing patterns.
Important Note for watermarks	Watermarks have the following characteristics: • A watermark is presumed to be synthesized with text documents. If it is used with photos or images, the containing characters may be seen in the watermark document (primary output) or the containing characters may not appear properly in the watermark copy (secondary output). • When a watermark is synthesized with newspapers or other dark-background documents, the containing characters may not appear in the watermark copy (secondary output). • Containing characters may not appear in the watermark copy (secondary output) depending on the kind of the copier which makes the watermark copy (secondary output) and the copy mode. • Containing characters may not appear clearly in the watermark copy (secondary output) depending on the copy mode in which the watermark document (primary output) is made. • When the print engine status changes, the containing characters may not be concealed properly in the watermark document (primary output). In this case, follow the procedures below to conceal the containing characters. * Use SIM46-24 to execute the color balance adjustment. * Use SIM46-54 to execute the color balance adjustment for each dither. * Adjust the watermark print contrast in the system setting. • Though the watermark of cyan or magenta is selected in the black and white mode, the black watermark is synthesized. • For a document which is judged as monochrome with ACS selected, though the watermark color is specified as cyan or magenta, the black watermark is synthesized. • The preview screen of the watermark only indicates the setting of the watermark color, and does not indicate an actual copy image. • When the document control (printer mode) is used together, it is advisable to use "Characters appearing" setting. If "Background appearing" setting is used together, the detection accuracy of document control may be reduced. • In the printer mode watermark, setting of 1200dpi and a watermark cannot be used together.

Watermark adjustment in the system setting

System setting → Security setting → Watermark print → Contrast tab

Watermark kind mode selection	Density	Adjustment
Character appearing	To increase the text density	Decrease the contrast value. (Default: 5)
	To decrease the text density	Increase the contrast value. (Default value: 5)
Background appearing	To increase the text density	Increase the contrast value. (Default value: 5)
	To decrease the text density	Decrease the contrast value. (Default: 5)

Important

Note for adjusting the watermark with SIM46-54

When the color balance automatic adjustment is executed with SIM46-74 or SIM46-24 but the containing characters are reproduced, use SIM46-54 to execute the color balance automatic adjustment for each dither.

However, note the following items.

- When either of item K or L of the PATTERN mode is 42, the adjustment must be executed for the both modes of WOVEN1 and WOVEN2 of SIM46-54.
- When either of item K or L of the PATTERN mode is 43, the adjustment must be executed for the both modes of WOVEN3 and WOVEN4 of SIM46-54.
- WOVEN1 and WOVEN2 must be adjusted in a pair as well as WOVEN3 and WOVEN4.

  If it is ignored, the containing characters remain reproduced.

10-E Printer image quality adjustment (Basic adjustment)

Requisite condition before execution of the printer color balance/density adjustment

Before execution of the printer color balance/density adjustment, the copy color balance/density adjustment must have been completed properly.

This adjustment is required in the following cases.

* Basically same as when the copy color balance/density adjustment is required.
* After the copy color balance/density adjustment.

10-E (1) Printer color balance adjustment (Automatic adjustment)

a. General

The color balance adjustment (auto adjustment) is used to adjust the print density of each color (Cyan, Magenta, Yellow, Black) automatically with SIM 67-24 or the user program.

When this adjustment is executed, the color balance adjustments of all the print modes are revised.

There are following two modes in the auto color balance adjustment.

1) Auto color balance adjustment by the serviceman (SIM 67-24 is used.)
2) Auto color balance adjustment by the user (The user program mode is used.) (The color balance target is the service target.)

   The auto color balance adjustment by the user is provided to reduce the number of service calls.

   If the print color balance is lost for some reasons, the user can use this color balance adjustment to recover the balance.

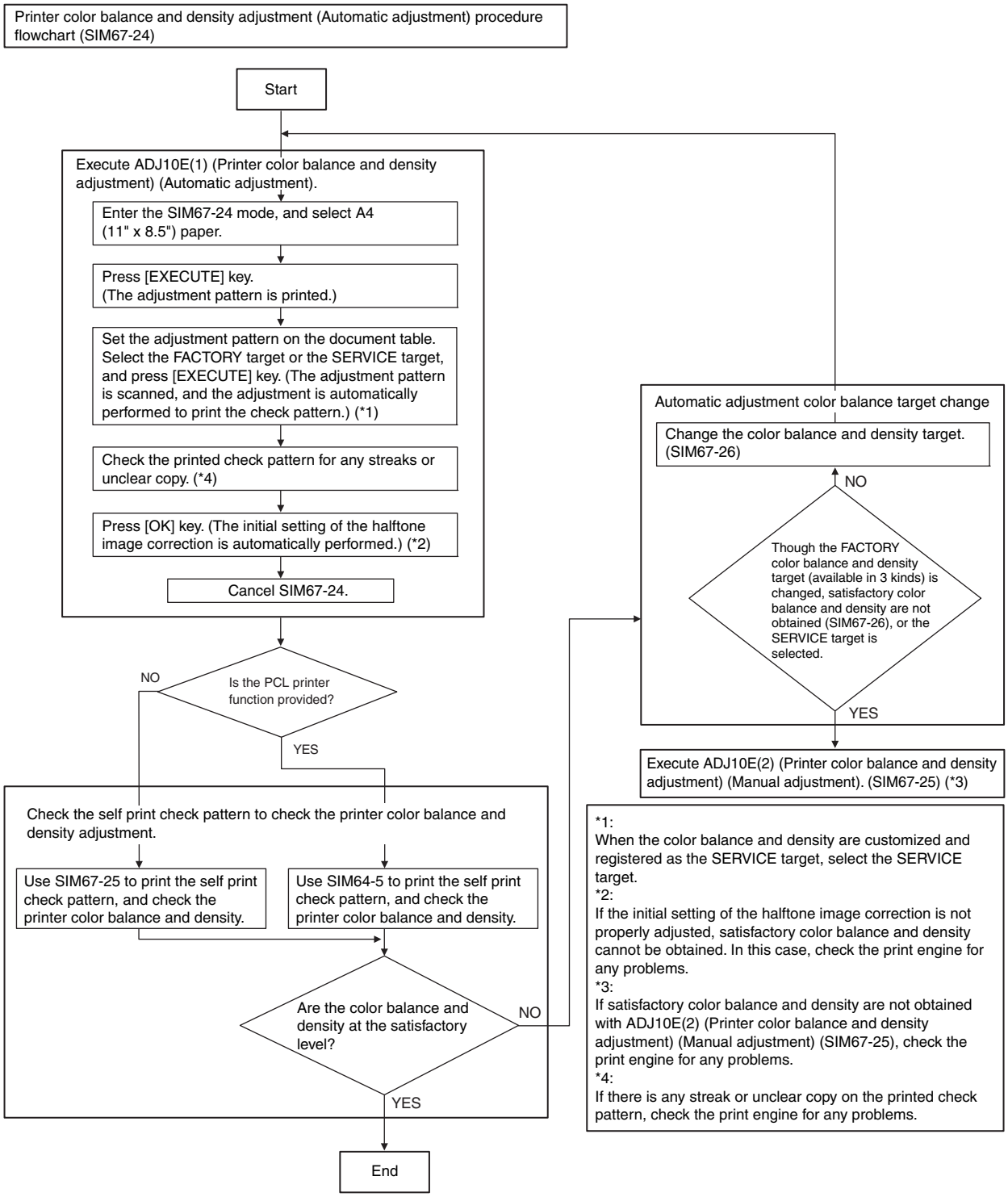
   When, however, the machine has a fatal problem or when the machine condition is greatly changed, this function does not work effectively.

   On the other hand, the auto color balance adjustment by the serviceman functions to recover the normal color balance though the machine condition is greatly changed. If the machine has a fatal problem, repair and adjust it for obtaining the normal color balance.

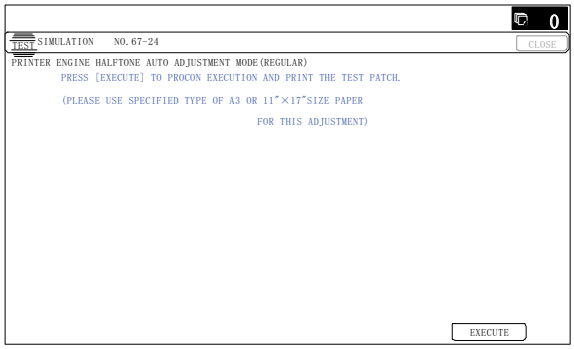
   To perform the adjustment, the above difference must be fully understood.

b. Adjustment procedure

(Auto color balance adjustment by the serviceman)


Printer color balance and density adjustment (Automatic adjustment) procedure flowchart (SIM67-24)
Start
Execute ADJ10E(1) (Printer color balance and density adjustment) (Automatic adjustment).
Enter the SIM67-24 mode, and select A4 (11" x 8.5") paper.
Press [EXECUTE] key. (The adjustment pattern is printed.)
Set the adjustment pattern on the document table. Select the FACTORY target or the SERVICE target, and press [EXECUTE] key. (The adjustment pattern is scanned, and the adjustment is automatically performed to print the check pattern.) (*1)
Check the printed check pattern for any streaks or unclear copy. (*4)
Press [OK] key. (The initial setting of the halftone image correction is automatically performed.) (*2)
Cancel SIM67-24.
Is the PCL printer function provided?
NO
YES
Check the self print check pattern to check the printer color balance and density adjustment.
Use SIM67-25 to print the self print check pattern, and check the printer color balance and density.
Use SIM64-5 to print the self print check pattern, and check the printer color balance and density.
Are the color balance and density at the satisfactory level?
NO
YES
End
Automatic adjustment color balance target change
Change the color balance and density target. (SIM67-26)
Though the FACTORY color balance and density target (available in 3 kinds) is changed, satisfactory color balance and density are not obtained (SIM67-26), or the SERVICE target is selected.
NO
YES
Execute ADJ10E(2) (Printer color balance and density adjustment) (Manual adjustment). (SIM67-25) (*3)
*1:
When the color balance and density are customized and registered as the SERVICE target, select the SERVICE target.
*2:
If the initial setting of the halftone image correction is not properly adjusted, satisfactory color balance and density cannot be obtained. In this case, check the print engine for any problems.
*3:
If satisfactory color balance and density are not obtained with ADJ10E(2) (Printer color balance and density adjustment) (Manual adjustment) (SIM67-25), check the print engine for any problems.
*4:
If there is any streak or unclear copy on the printed check pattern, check the print engine for any problems.

1) Enter the SIM 67-24 mode.

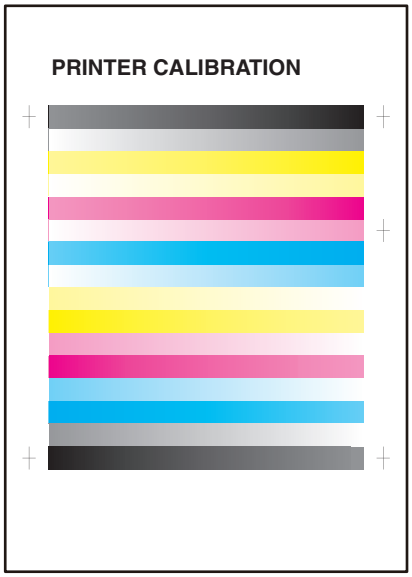

SIMULATION NO. 67-24
CLOSE
PRINTER ENGINE HALFTONE AUTO ADJUSTMENT MODE(REGULAR)
PRESS [EXECUTE] TO PROCON EXECUTION AND PRINT THE TEST PATCH.
(PLEASE USE SPECIFIED TYPE OF A3 OR 11"×17"SIZE PAPER
FOR THIS ADJUSTMENT)
EXECUTE

2) Press [EXECUTE] key. (A4/11" x 8.5" or A3/11" x 17" paper is automatically selected.)

   The color patch image (adjustment pattern) is printed out.

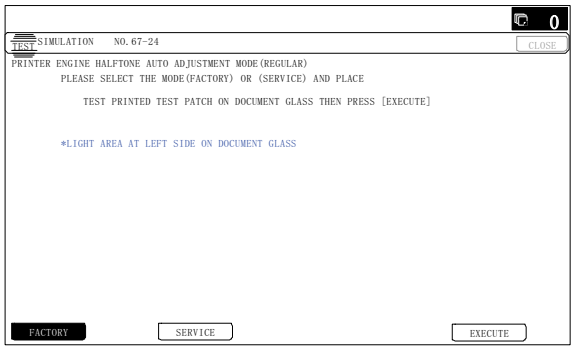
3) Set the color patch image (adjustment pattern) paper printed in procedure 2) on the document table.

   Place the printed color patch image (adjustment pattern) paper on the document table so that the thin lines on the paper are on the left side. Place 5 sheets of white paper on the printed color patch image (adjustment pattern) paper.

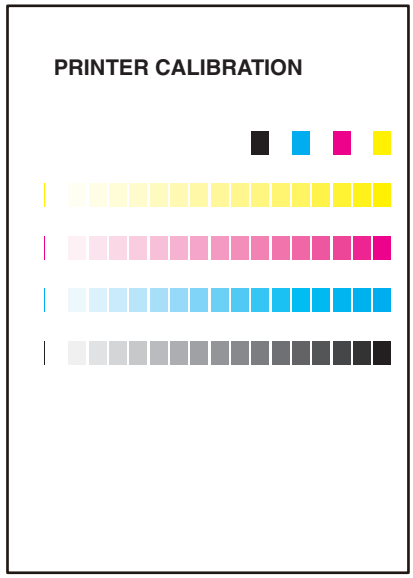


4) Select [FACTORY] key, and press [EXECUTE] key.

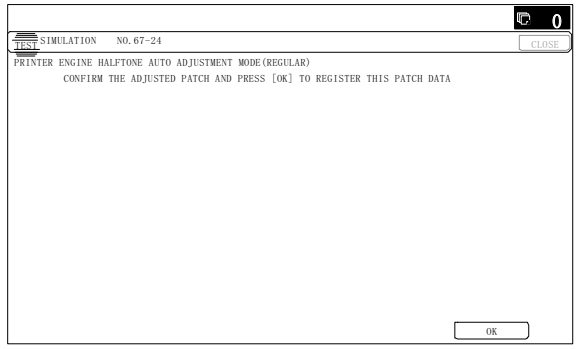
   When the color balance is customized with the manual color balance adjustment (SIM 67-25) according to the user's request and the color balance is registered as the service target with SIM 67-27, if the color balance is adjusted to that color balance, select the service target.


SIMULATION NO. 67-24
CLOSE
PRINTER ENGINE HALFTONE AUTO ADJUSTMENT MODE(REGULAR)
PLEASE SELECT THE MODE(FACTORY) OR (SERVICE) AND PLACE
TEST PRINTED TEST PATCH ON DOCUMENT GLASS THEN PRESS [EXECUTE]
*LIGHT AREA AT LEFT SIDE ON DOCUMENT GLASS
FACTORY
SERVICE
EXECUTE

The copy color balance adjustment is automatically executed and prints the color balance check patch image. Wait until the operation panel shown in the procedure 5) is displayed.



5) Press [OK] key on the operation panel.

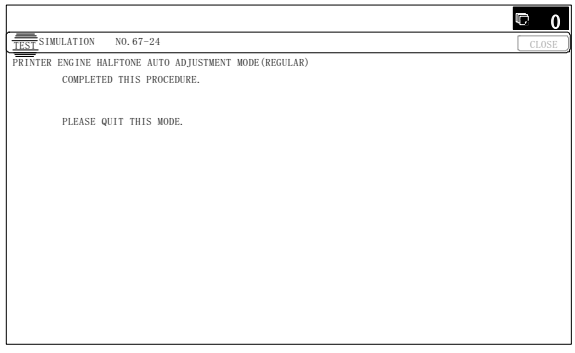

SIMULATION NO. 67-24
CLOSE
PRINTER ENGINE HALFTONE AUTO ADJUSTMENT MODE(REGULAR)
CONFIRM THE ADJUSTED PATCH AND PRESS [OK] TO REGISTER THIS PATCH DATA
OK

Note

After pressing [OK] key, the initial setting of the halftone image correction is started. During the operation, "NOW REGISTERING THE NEW TARGET OF HALFTONE" is displayed. This operation takes several minutes.

After completion of the operation, "PLEASE QUIT THIS MODE" is displayed.

Do not cancel the simulation until "PLEASE QUIT THIS MODE" is displayed.



After completion of the operation, the simulation is canceled.

6) Check the color balance and density.

(Refer to the item of the printer color balance and density check.)

When satisfactory color balance and density are not obtained from the automatic adjustment by selecting the factory target in procedure 4), change the factory color balance target with SIM 67-26 and repeat the procedures from 1).

If a satisfactory result on the color balance and the density is not obtained with the automatic adjustment, execute the manual adjustment (SIM 67-25) (ADJ 10E (2)).

Also when the service target is selected in procedure 4) to execute the automatic adjustment and a satisfactory result is not obtained, perform the manual color balance adjustment (ADJ 10E (2)).

If the color balance or density is not in the satisfactory level even after execution of the automatic and manual adjustments, there may be another cause.

Troubleshoot the cause, repair or perform necessary works, and repeat the adjustment from the beginning.

10-E (2) Printer color balance adjustment (Manual adjustment)

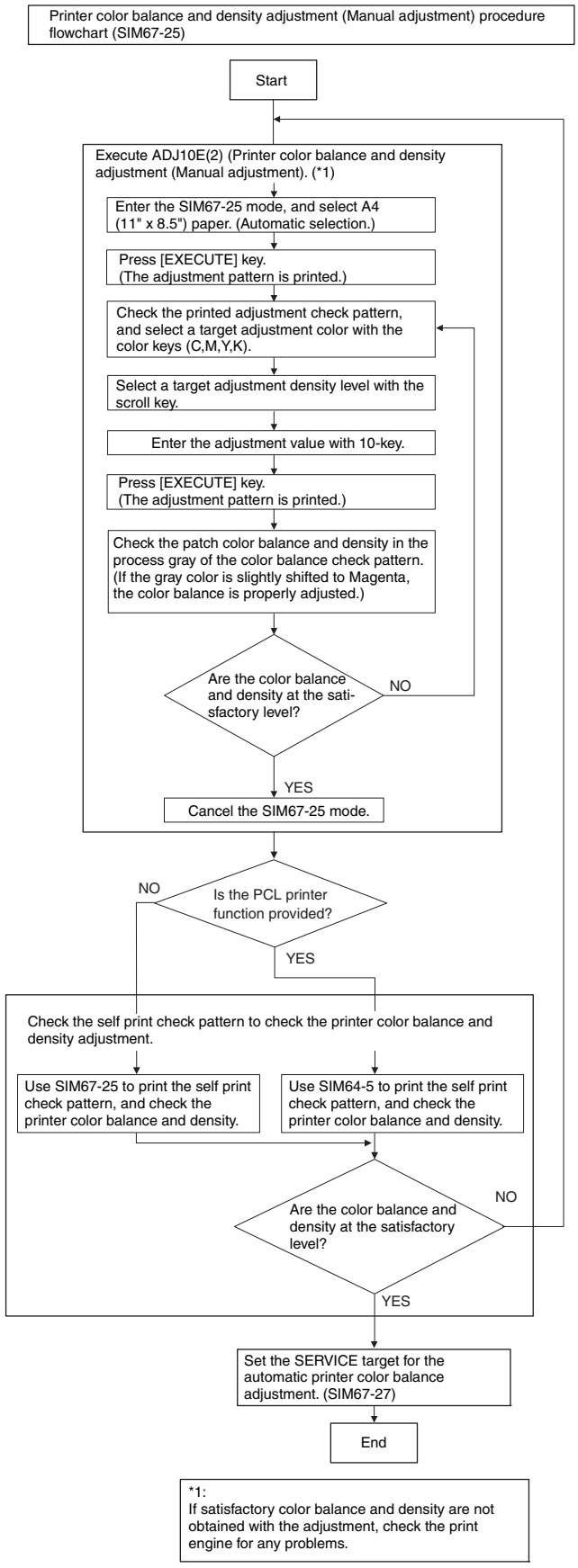
a. General

The color balance adjustment (Manual adjustment) is used to adjust the printer density of C, M, Y and K. This is used at the following situation. When the result of auto adjustment described above is not existing within the range of reference. When a fine adjustment is required. When there is request from the user for changing (customizing) the color balance.

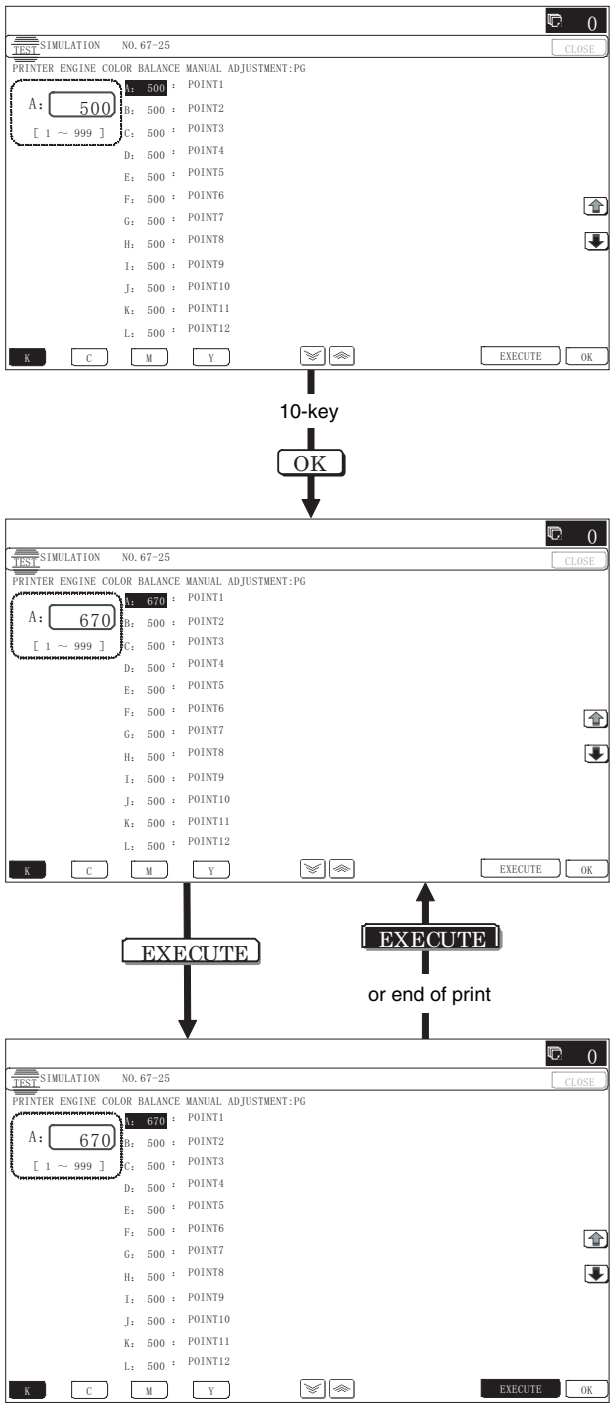
In this manual adjustment, adjust only the color patch which could not adjusted properly in the automatic adjustment.

If the color balance is improper, execute the automatic color balance adjustment in advance, and execute this adjustment for better efficiency.

b. Adjustment procedure


Printer color balance and density adjustment (Manual adjustment) procedure flowchart (SIM67-25)
Start
Execute ADJ10E(2) (Printer color balance and density adjustment (Manual adjustment). (*1)
Enter the SIM67-25 mode, and select A4 (11" x 8.5") paper. (Automatic selection.)
Press [EXECUTE] key. (The adjustment pattern is printed.)
Check the printed adjustment check pattern, and select a target adjustment color with the color keys (C,M,Y,K).
Select a target adjustment density level with the scroll key.
Enter the adjustment value with 10-key.
Press [EXECUTE] key. (The adjustment pattern is printed.)
Check the patch color balance and density in the process gray of the color balance check pattern. (If the gray color is slightly shifted to Magenta, the color balance is properly adjusted.)
Are the color balance and density at the satisfactory level?
NO
YES
Cancel the SIM67-25 mode.
Is the PCL printer function provided?
NO
YES
Check the self print check pattern to check the printer color balance and density adjustment.
Use SIM67-25 to print the self print check pattern, and check the printer color balance and density.
Use SIM64-5 to print the self print check pattern, and check the printer color balance and density.
Are the color balance and density at the satisfactory level?
NO
YES
Set the SERVICE target for the automatic printer color balance adjustment. (SIM67-27)
End
*1:
If satisfactory color balance and density are not obtained with the adjustment, check the print engine for any problems.

1) Enter the SIM 67-25 mode.

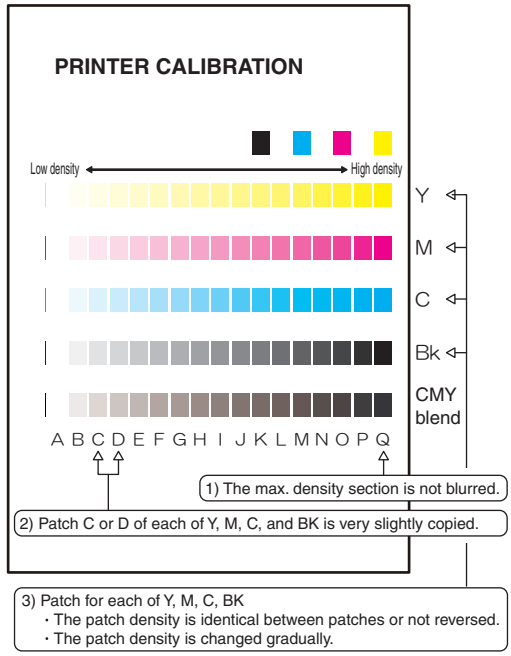


2) Press [EXECUTE] key. (A4/11" x 8.5" or A3/11" x 17" paper is automatically selected.)

The color balance adjustment pattern is printed.

3) Check that the following specification is satisfied or the color balance is satisfactory.

If not, execute the following procedures.


PRINTER CALIBRATION
Low density
High density
Y
M
C
Bk
CMY blend
A B C D E F G H I J K L M N O P Q
1) The max. density section is not blurred.
2) Patch C or D of each of Y, M, C, and BK is very slightly copied.
3) Patch for each of Y, M, C, BK
・The patch density is identical between patches or not reversed.
・The patch density is changed gradually.

The print density must be changed gradually from the lighter level to the darker level. The density changing direction must not be reversed.

The density level of each color must be almost at the same level.

Patch B may not be copied.

Patch A must not be copied.

When, however, the color balance is adjusted according to a request from the user, there is no need to set to the standard color balance stated above.

If the color balance of each patch of the process black (CMY mixed color) is slightly shifted to Magenta, it means that the adjustment is proper. In an actual print mode, it is converted into the natural gray color balance by the color table. (When the color balance target is DEF 1.)

4) Select the color to be adjusted with the color select key, and select the adjustment point with the scroll key.

5) Enter the adjustment value with 10-key and press [OK] key.

The adjustment value is set in the range of (1 - 999). When SIM 67-24 is used to adjust the automatic color balance and density, all the set values of this simulation are set to 500.

To increase the density, increase the adjustment value. To decrease the density, decrease the adjustment value.

Repeat procedures of 2) - 5) until the condition of 3) is satisfied.

When the overall density is low, or when the density is high and patch A is copied, use the arrow key to adjust all the adjustment values of A - Q (MAX) to a same level collectively.

Then, adjust each patch density individually. This is an efficient way of adjustment.

Referring to the black/gray patches, adjust so that each process (CMY) black/gray patch color balance of A - Q (MAX) approaches the black/gray patch level as far as possible.

6) Check the color balance and density.

(Refer to the item of the printer color balance and density check.)

Note

If the color balance is customized, use SIM 67-27 to register the color balance as the service target.

If the color balance is not customized, this procedure is not required.

If the customized color balance is registered as the service target, the automatic color balance adjustment can be made in the next color balance adjustment.

10-F Printer image quality adjustment (Individual adjustment)

a. General

This adjustment is used to execute the fine adjustment in each mode only when a satisfactory image quality is not obtained by the basic adjustments ADJ 10E (1) and ADJ 10E (2) or there is a request from the user. Normally there is no need to execute this adjustment.

This must be well understood for execution of the adjustment.

10-F (1) Printer density adjustment (Low density section density adjustment) (No need to adjust normally)

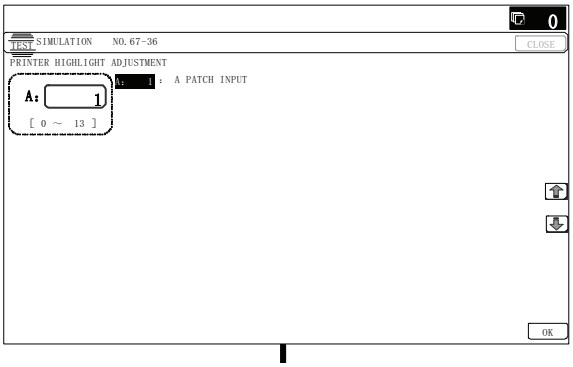
This adjustment is used to adjust the image density in the low density area in the printer mode.

Adjust to reproduction setting of the low density image.

This adjustment is required in the following cases.

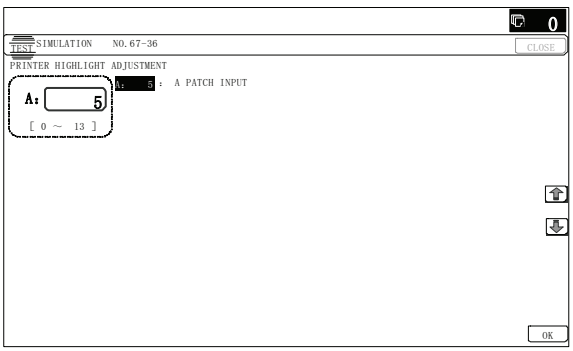
* When it is required not to reproduce images in the low density section, or to reproduce low-density images.
* When there is request from the user.

1) Enter the SIM 67-36 mode.



10-key

OK



2) Enter the adjustment value and press the [OK] key.

In case of increase of the image density on low density part, increase the adjustment value. For diluting the image density on low density part, decrease the adjustment value.

10-F (2) Printer high density image density reproduction setting (Supporting the high density section tone gap) (No need to adjust normally)

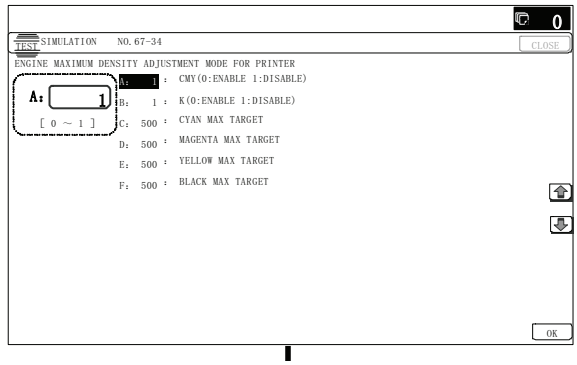
When a tone gap is generated in the high density section in the printer mode, the setting is changed to lower the density in the high density section.

This setting is normally not required, however, in the following cases, a change of setting must be made.

* When a tone gap occurs on part of high density.
* To lower the density in the high density section.

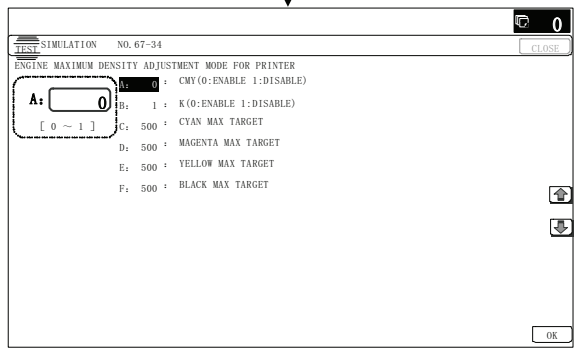
a. Adjustment procedure

1) Enter the SIM 67-34 mode.


SIMULATION NO. 67-34
CLOSE
ENGINE MAXIMUM DENSITY ADJUSTMENT MODE FOR PRINTER
A: 1 : CMY(0:ENABLE 1:DISABLE)
B: 1 : K(0:ENABLE 1:DISABLE)
C: 500 : CYAN MAX TARGET
D: 500 : MAGENTA MAX TARGET
E: 500 : YELLOW MAX TARGET
F: 500 : BLACK MAX TARGET
A: 1
[0 ~ 1]
OK

10-key

OK


SIMULATION NO. 67-34
CLOSE
ENGINE MAXIMUM DENSITY ADJUSTMENT MODE FOR PRINTER
A: 0 : CMY(0:ENABLE 1:DISABLE)
B: 1 : K(0:ENABLE 1:DISABLE)
C: 500 : CYAN MAX TARGET
D: 500 : MAGENTA MAX TARGET
E: 500 : YELLOW MAX TARGET
F: 500 : BLACK MAX TARGET
A: 0
[0 ~ 1]
OK

2) Select the item A, B with the scroll key.

Display/Item		Content		Setting range	Default
A	CMY (0: ENABLE 1:DISABLE)	0	CMY engine maximum density correction mode Enable	0 - 1	0
		1	CMY engine maximum density correction mode Disable		
B	K (0:ENABLE 1: DISABLE)	0	K engine maximum density correction mode Enable	0 - 1	1
		1	K engine maximum density correction mode Disable		
C	CYAN MAX TARGET	Scanner target value for CYAN maximum density correction		0 - 999	500

Display/Item		Content	Setting range	Default
D	MAGENTA MAX TARGET	Scanner target value for MAGENTA maximum density correction	0 - 999	500
E	YELLOW MAX TARGET	Scanner target value for YELLOW maximum density correction	0 - 999	500
F	BLACK MAX TARGET	Scanner target value for BLACK maximum density correction	0 - 999	500

* If a tone gap occurs on part of high density, set 0 to item A and B
  The density of high density part decreases. However, the tone gap is better.
* In case of more increase of the density on high density part, set 1 to item A and B.
  The tone gap may occur in high density part.

Important

If the setting values of item C, D, E and F are changed, density of the high density part is changed.

When these values are changed, be sure to perform the printer color balance and density adjustment. (Automatic adjustment)

10-F (3) Printer gamma adjustment for each dither (Automatic adjustment) (No need to adjust normally) (Except for GDI printers)

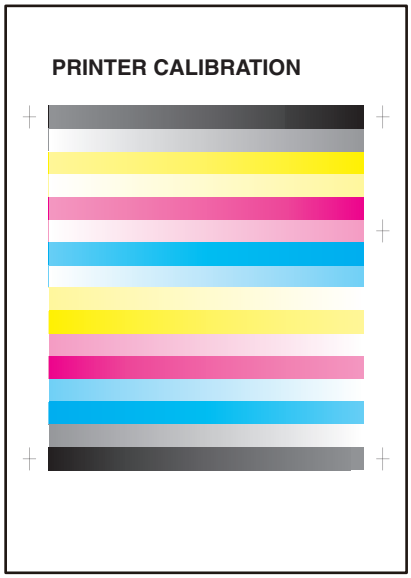
a. General

This adjustment is used to adjust the color balance and the density in the monochrome mode, the heavy paper mode, and the gloss paper mode.

This simulation is used to improve image quality in these modes and images.

b. Adjustment procedures

1) Enter the SIM67-54 mode.
2) Press [EXECUTE] key.
   A4/11" x 8.5" or A3/11" x 17" paper is automatically selected. The color patch image (adjustment pattern) is printed out.
3) Set the color patch image (adjustment pattern) printed in the procedure 2) on the document table so that the thin lines on the printed color patch image (adjustment pattern) are on the left side. Place 5 sheets of white paper on the printed color patch image (adjustment pattern).

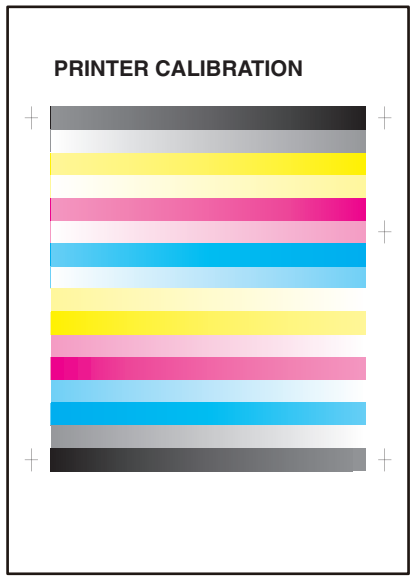


4) Press [EXECUTE] key.
   The color balance adjustment is automatically performed.
   The adjustment pattern is printed out. Check it for any abnormality.
5) Press [OK] key.
   The list of the adjustment items (for each dither) is displayed.
6) Select an adjustment item (for each dither).

Select item (Mode/Image)	Content
Heavy Paper	Adjustment item to improve the color balance in the heavy paper mode
B/W	Adjustment item to improve the density and gradation in the monochrome mode
Gloss Paper	Adjustment item to improve the color balance in the gloss paper mode
1200dpi 1bit*1	Adjustment item to improve the color balance in 1200dpi mode

*1: 20cpm/23cpm/31cpm(G) machine: Disable

7) Press [EXECUTE] key.
   A4/11" x 8.5" or A3/11" x 17" paper is automatically selected.
   The color patch image (adjustment pattern) is printed out.
8) Set the color patch image (adjustment pattern) printed in the procedure 7) on the document table so that the thin lines on the printed color patch image (adjustment pattern) are on the left side. Place 5 sheets of white paper on the printed color patch image (adjustment pattern).



9) Press [EXECUTE] key.
   The color balance adjustment is automatically performed, and the machine goes to the state of procedure 6).
10) When [OK] key is pressed, the adjustment result is registered and the adjustment mode is terminated. When [EXECUTE] key is pressed, the adjustment result is registered and the screen is shifted to the other item (Mode/Image) select menu.
    To execute the adjustment of the other item (Mode/Image), press [EXECUTE] key.
    After completion of all the adjustments of the items (Mode/Image), press [OK] key, and the adjustment results are registered.
11) Make a print, and check the print image quality.
    (Refer to the item of the printer color balance and density check.)

Note

Use SIM67-52 to reset the adjustment values to the default values.

10-F (4) Automatic color balance adjustment by the user (Printer color balance automatic adjustment ENABLE setting and adjustment) (Normally unnecessary to the setting change)

a. General

In the user program mode, the user can execute the auto color calibration (auto adjustment of the printer color balance and density).

This adjustment is to set Enable/Disable of the above user operation with SIM 26-53.

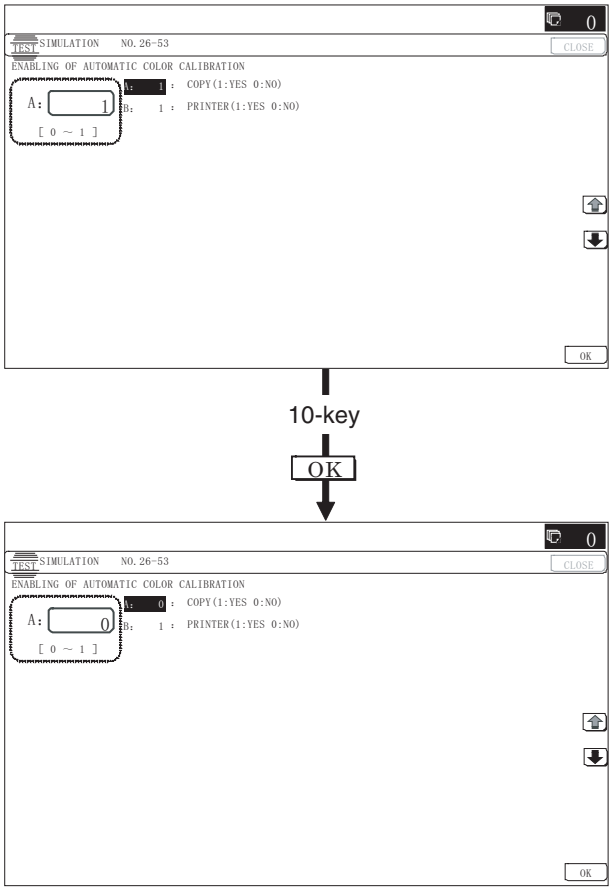
Important

This setting must be set to ENABLE only when the user's understanding on the automatic adjustment of the copy color balance and density and the user's operational ability are judged enough to execute the adjustment.

When set to enable, operation procedures must be fully explained to the user.

b. Setting procedure

1) Enter the SIM 26-53 mode.



2) Select ENABLE or DISABLE with 10-key.

   When disabling, set to "0" (NO). When enabling, set to "1" (Yes).

3) Press [OK] key.

When set to DISABLE, the menu of the user auto color calibration (automatic adjustment of printer color balance and density) is not displayed in the user program mode.

(Auto color calibration by the user (Auto color balance adjustment))

Important

This adjustment is based on the service target color balance set with SIM 67-27 or SIM 67-28. If, therefore, the above settings are not properly performed, this adjustment cannot be made properly.

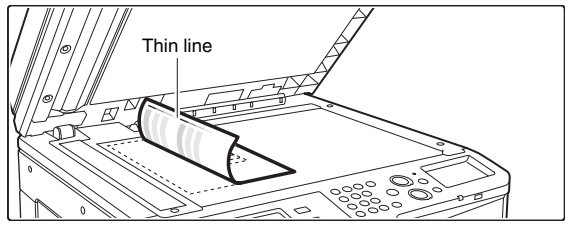
1) Enter the system setting mode.
2) Enter the printer setting mode.
3) Press the auto color calibration key.
4) Press [EXECUTE] key.

   The color patch image (adjustment pattern) is printed out.

5) Set the color patch image (adjustment pattern) printed in procedure 4) on the document table.

   Set the patch image so that the thin line is on the left side as shown in the figure.

   At that time, place 5 sheets of white paper on the above color patch image (adjustment pattern).



6) Press [EXECUTE] key, and the printer color balance adjustment is executed automatically.

   For the 26cpm/36cpm/31cpm(A) machines, the message, "Will you go on to the copy color balance adjustment?" is displayed. To execute the copy color balance adjustment successively, perform the procedures same as the above.

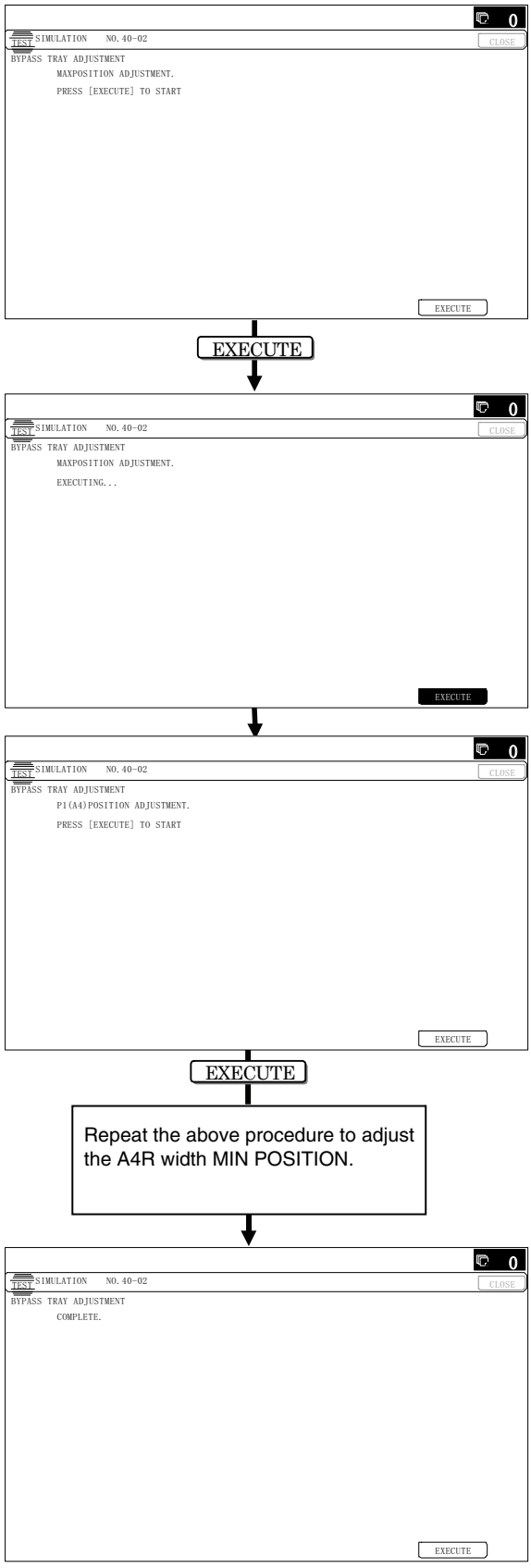
ADJ 11 Paper size sensor adjustment

11-A Manual paper feed tray paper size (width) sensor adjustment

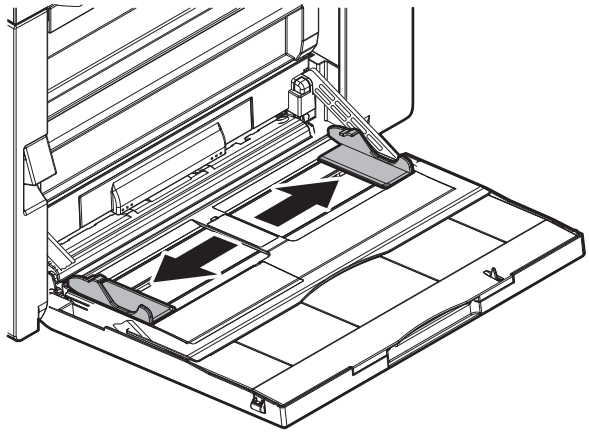
This adjustment must be performed in the following cases:

* The manual paper feed tray section has been disassembled.
* The manual paper feed tray unit has been replaced.
* U2 trouble has occurred.
* The PCU PWB has been replaced.
* The EEPROM of the PCU PWB has been replaced.

1) Enter the SIM 40-2 mode.



2) Open the manual paper feed guide to the maximum width position.



3) Press [EXECUTE] key.

   [EXECUTE] key is highlighted. Then it returns to the normal display.

   The maximum width position detection level of the manual paper feed guide is recognized.

4) Set the manual paper feed guide to the A4 size.

5) Press [EXECUTE] key.

   [EXECUTE] key is highlighted. Then it returns to the normal display.

   The A4 size width position detection level of the manual paper feed guide is recognized.

6) Set the manual paper feed guide to the width for the A4R size.

7) Press [EXECUTE] key.

   [EXECUTE] key is highlighted. Then it returns to the normal display.

   Set the manual paper feed guide to the width for the A4R size.

8) Open the manual paper feed guide to the minimum width position.

9) Press [EXECUTE] key.

   [EXECUTE] key is highlighted. Then it returns to the normal display.

   The minimum width position detection level of the manual paper feed guide is recognized.

   If the above operation is not completed normally, "ERROR" is displayed.

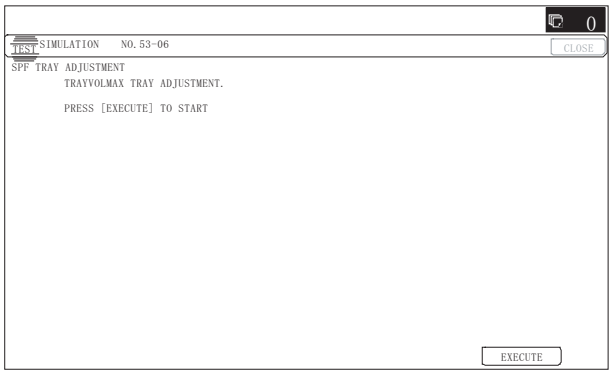
   When the operation is completed normally, the above data are saved to the memory and "COMPLETE" is displayed.

11-B RSPF paper feed tray document size (width) sensor adjustment

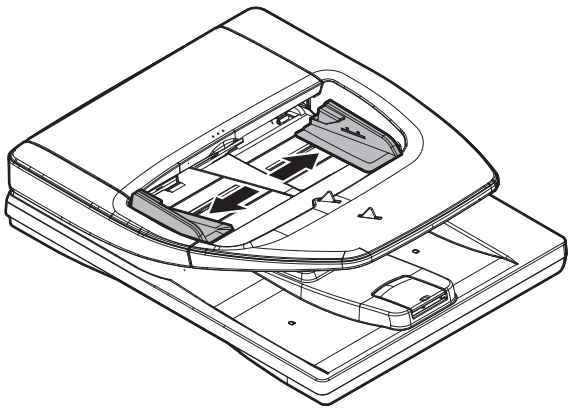
This adjustment must be performed in the following cases:

* The RSPF paper feed tray section has been disassembled.
* The RSPF paper feed tray unit has been replaced.
* When a U2 trouble occurs.
* The scanner PWB has been replaced.
* The EEPROM on the scanner PWB has been replaced.

1) Enter the SIM 53-6 mode.



2) Open the RSPF paper feed guide to the maximum width position.



3) Press [EXECUTE] key.
   The maximum width detection level is recognized.
4) Open the RSPF paper feed guide to the width for the A4R size.
5) Press [EXECUTE] key.
   The A4R width detection level is recognized.
6) Open the RSPF paper feed guide to the width for the A5R size.
7) Press [EXECUTE] key.
   The A5R width detection level is recognized.
8) Open the RSPF paper feed guide to the minimum width position.
9) Press [EXECUTE] key.
   The minimum width detection level is recognized.

* When each of the above operations has been completed, the "COMPLETE" message appears; when any of the operations has failed, the "ERROR" message appears.

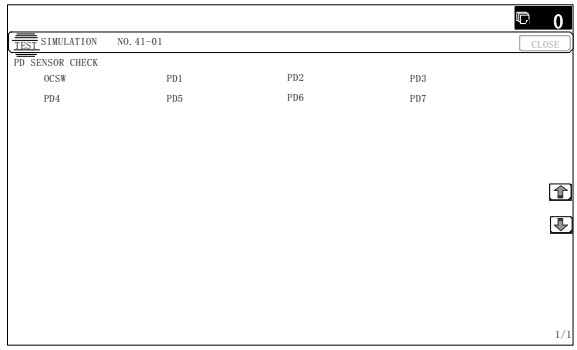
ADJ 12 Document size detection adjustment

This adjustment must be performed in the following cases:

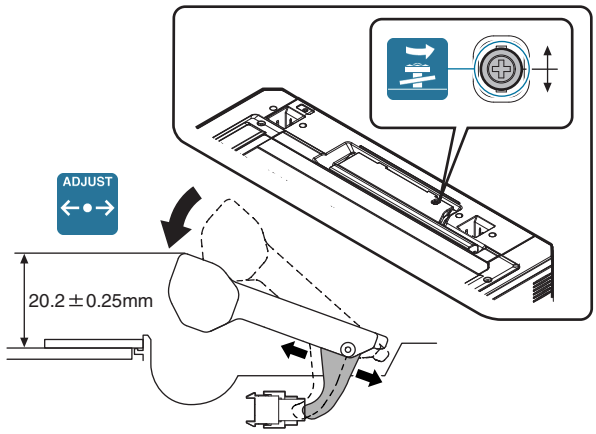
* When the original size sensor section has been disassembled.
* When the original size sensor section has been replaced.
* When U2 trouble has occurred.
* When the scanner control PWB is replaced.
* When the EEPROM on the scanner control PWB is replaced.

12-A Document size sensor detection point adjustment

1) Enter the SIM 41-1 mode.

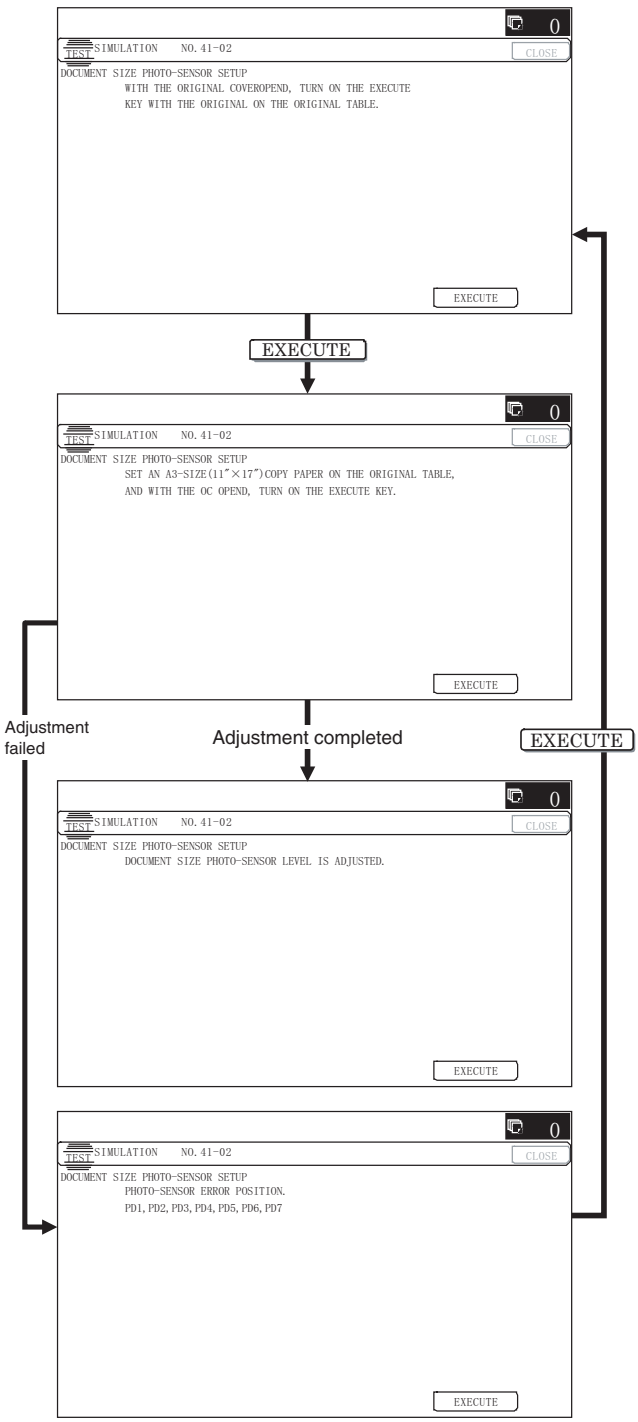


Loosen the original cover switch actuator adjustment screw and slide the actuator position so that the display OCSW is returned to the normal display when the height of the arm unit top from the table glass is 20.2 ± 0.25mm by slowly tilting the document detection arm unit in the arrow direction and adjust. (If the ON timing of the original cover switch is shifted, the document detection function may malfunction.)



12-B Adjust the sensitivity of the original size sensor

1) Enter the SIM41-2 mode.



2) Execute the sensor adjustment without document.

   With the document cover open, without placing a document on the table glass, press [EXECUTE] key.

3) Place A3 (11" x 17") paper on the document table and press [EXECUTE] key.

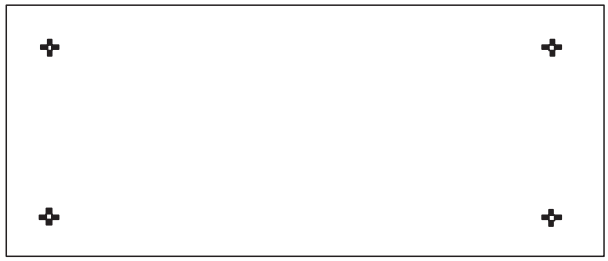
If the adjustment is completed normally, "DOCUMENT SIZE PHOTO SENSOR LEVEL IS ADJUESTED" is displayed.

ADJ 13 Touch panel coordinate setting

This adjustment must be performed in the following cases:

* The operation panel has been replaced.
* U2 trouble has occurred.
* The scanner control PWB has been replaced.
* The EEPROM on the scanner control PWB has been replaced.

1) Enter the SIM 65-1 mode.



2) Precisely press the cross mark points (4 positions).

   When the cross mark is pressed precisely, a buzzer sounds and the display is reversed. When all the four points are pressed and the touch panel adjustment is completed, the display returns to the simulation sub number entry screen.

   In case of an error, the display returns to the entry screen again.

   Check to confirm that there is no shift between the display frame and the detection position when the touch panel is pressed.

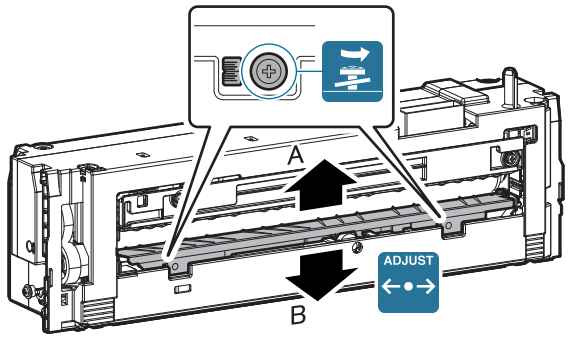
   * When pressing the touch panel, never use a sharp tip (such as a needle or a pin).

ADJ 14 Fusing paper guide position adjustment

Normally there is no need to perform this adjustment. In the following cases, perform this adjustment.

* When a paper jam occurs in the fusing section.
* When wrinkles are made on paper in the fusing section.
* When an image deflection or an image blur is generated in the paper rear edge section.

1) Loosen the fusing paper guide fixing screws on the two positions in the front/rear frame direction.
2) Use the fusing paper guide position scale as the reference to shift the paper guide in the arrow direction A or B.



The standard fixing position is at two scales in direction B from the marking scale center. However, the position may be varied depending on the situation.

* When a wrinkle is made on paper, change the position in the error direction A.
* When an image deflection or unclear image is generated in the lead edge area of paper, change the position in the arrow direction B.

ADJ 15 Print image position, image magnification ratio, void area, off-center adjustment (Print engine) (Manual adjustment)

Note

Normally if the adjustment is executed by ADJ 4 (automatic adjustment), there is no need to execute this adjustment.

Only when the manual adjustment is required, execute this adjustment.

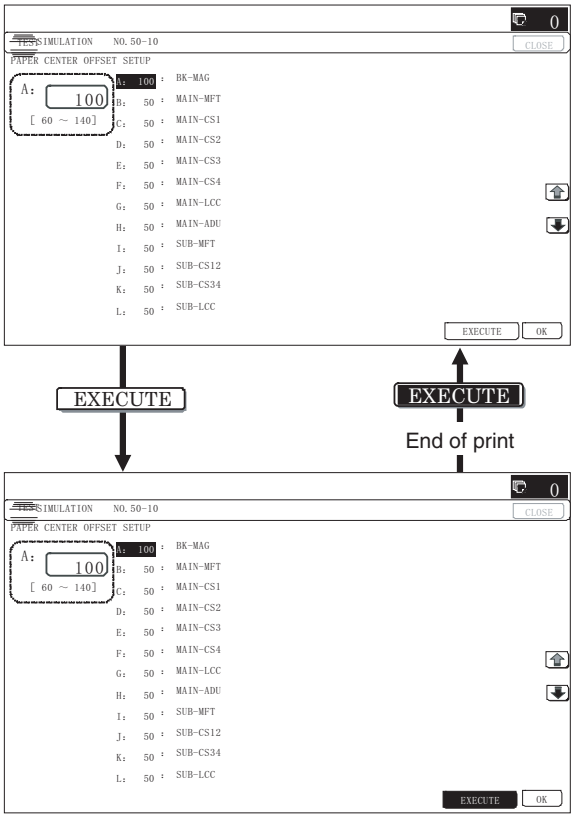
In other words, this manual adjustment is executed when a satisfactory result is not obtained from the automatic adjustment (ADJ 4).

15-A Print image magnification ratio adjustment (main scanning direction) (Print engine) (Manual adjustment)

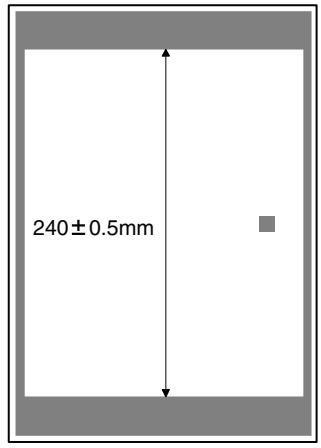
This adjustment must be performed in the following cases:

* When the LSU (writing) unit is replaced.
* U2 trouble has occurred.
* The PCU PWB has been replaced.
* The EEPROM of the PCU PWB has been replaced.

1) Enter the SIM 50-10 mode.



2) Set A4 (11" x 8.5") paper in the paper feed tray.
3) Select the paper feed tray set in procedure 2) with the scroll key.
4) Press [EXECUTE] key.
   The check pattern is printed out.
5) Check that the inside dimension of the printed halftone is 240 ± 0.5mm.



   If the above requirement is not met, do the following steps.
6) Change the set value of set item A.
   When the set value is changed by 1, the dimension is changed by 0.1mm.
   When the set value is increased, the BK image magnification ratio in the main scanning direction is increased. When the set value is decreased, the BK image magnification ratio in the main scanning direction is decreased.

Repeat procedures 2) - 6) until a satisfactory result is obtained.

15-B Print image print area adjustment (Print engine) (Manual adjustment)

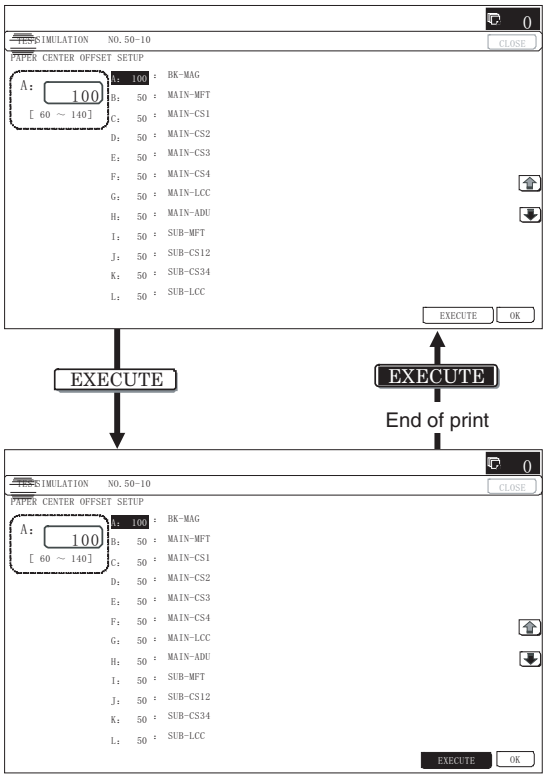
This adjustment must be performed in the following cases:

* When the LSU is replaced or removed.
* When a paper tray is replaced.
* When the paper tray section is disassembled.
* When the manual feed tray is replaced.
* When the manual feed tray is disassembled.
* When the duplex mode paper transport section is disassembled.
* When the registration roller section is disassembled.
* U2 trouble has occurred.
* The PCU PWB has been replaced.
* The EEPROM of the PCU PWB has been replaced.

Note

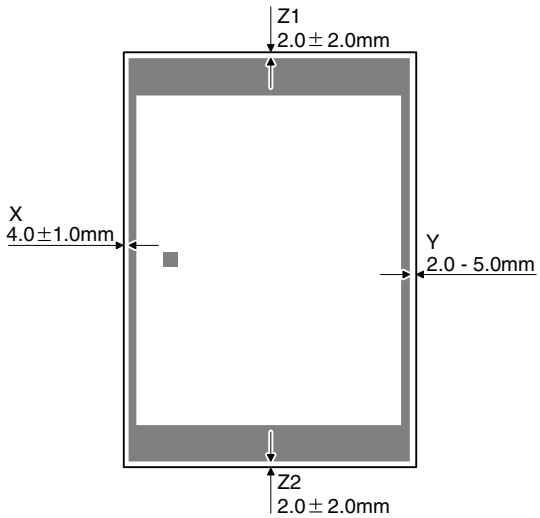
Before execution of this adjustment, be sure to execute the print image magnification ratio adjustment (ADJ 15A) (main scanning direction) (print engine) (manual adjustment).

1) Enter the SIM 50-10 mode.



2) Set A4 (11 x 8.5") paper to all the paper feed trays. Select an adjustment item of the target paper feed tray among items B - N and enter the adjustment value. Then select item "O" to select the paper feed tray which is to be used for executing test printing.
3) Press [EXECUTE] key.
   The adjustment pattern is printed.
4) Check the adjustment pattern to confirm that the items below are in the range of the standard values.

	Content	Standard adjustment value
X	Lead edge void area	4.0 ± 1.0mm
Y	Rear edge void area	2.0 - 5.0mm
Z1/Z2	FRONT/REAR void area	2.0 ± 2.0mm

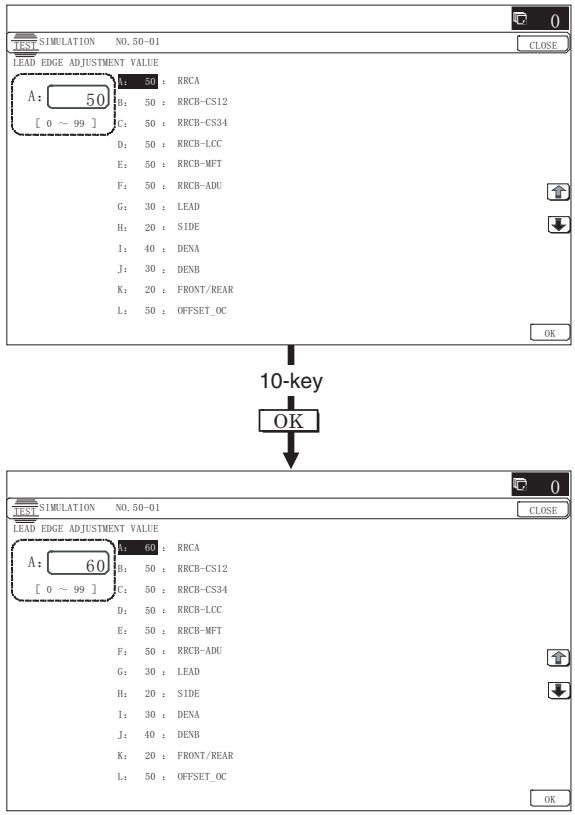


If the above condition is not satisfied, or if it is set to a desired condition, execute the simulation 50-1.

Note

Feed paper from all the paper feed trays to confirm.

5) Enter the SIM 50-1 mode.



6) Select an adjustment item (DENA, DENB, FRONT/REAR) with the scroll key, enter the adjustment value, and press [OK] key.

Item/Display		Content	Setting range	Default value
Void area adjustment	DENA	Lead edge void area adjustment	1 - 99	40
	DENB	Rear edge void area adjustment	1 - 99	30
	FRONT/ REAR	FRONT/REAR void area adjustment	1 - 99	20
Sub scanning direction print area correction value	DENB-MFT	Manual feed correction value	1 - 99	50
	DENB-CS1	Tray 1 correction value	1 - 99	50
	DENB-CS2	Tray 2 correction value	1 - 99	50
	DENB-CS3	Tray 3 correction value	1 - 99	50
	DENB-CS4	Tray 4 correction value	1 - 99	50
	DENB-LCC	LCC correction value	1 - 99	50
	DENB-ADU	ADU correction value	1 - 99	50
	DENB-HV	Heavy paper correction value	1 - 99	50

When the adjustment value is increased, the void area is increased. When the adjustment value is decreased, the void area is decreased.

When the adjustment value is changed by 1, the void area is changed by 0.1mm.

Note

The adjustment value and the actual void area are related as follows:

Adjustment value/10 = Actual void area

Note

When the amount of the rear edge void is different between each paper feed tray, change the adjustment value of item (DENB-XXX) in SIM50-1 and adjust.

The adjustment item (DENB) have a effect on the paper of all paper feed tray.

That is, adjustment value of item (DENB-XXX) fine adjusts to adjustment item (DENB) for each paper tray.

After execution of the above, perform procedures 1) - 4) to check that the void area is within the specified range.

Though the lead edge void area adjustment value is proper, if the lead edge void area is not within the specified range, change the adjustment value of item (RRCB-XXX) in SIM 50-1.

Repeat the above procedures until a satisfactory result is obtained.

15-C Print image off-center adjustment (Print engine) (Manual adjustment)

This adjustment must be performed in the following cases:

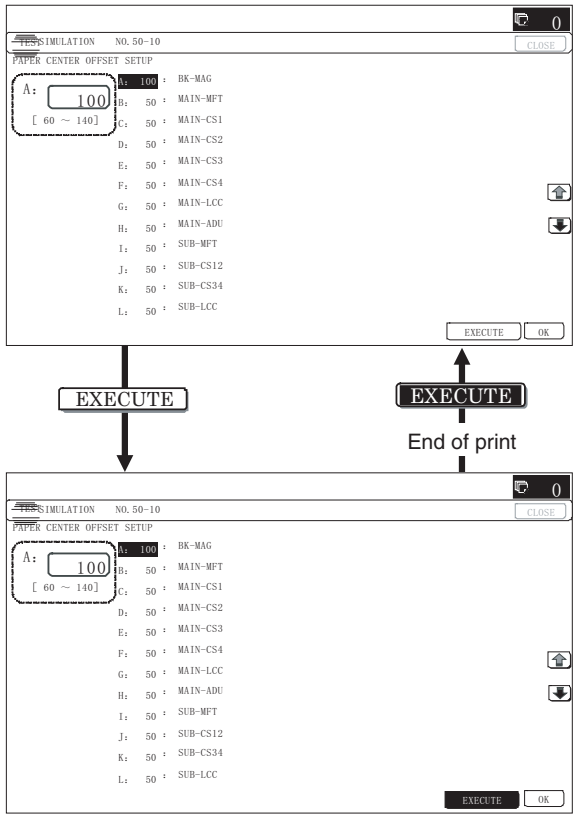
* When the LSU is replaced or removed.
* When a paper tray is replaced.
* When the paper tray section is disassembled.
* When ADJ 3B Print engine image magnification ratio adjustment (Main scanning direction) is performed.
* When the manual feed tray is replaced.
* When the manual feed tray is disassembled.
* When the duplex mode paper transport section is disassembled.
* When the registration roller section is disassembled.
* U2 trouble has occurred.
* The PCU PWB has been replaced.
* The EEPROM of the PCU PWB has been replaced.

Note

Before execution of this adjustment, check to insure the following item.

* The print image magnification ration adjustment (ADJ 15A) (main scanning direction) (Print engine) (Manual adjustment) has been properly adjusted.

1) Enter SIM 50-10 mode.



2) Select the target paper feed tray (MAIN-XX) with the scroll key.

Display/Item	Content	Setting range
NO	Not select	1

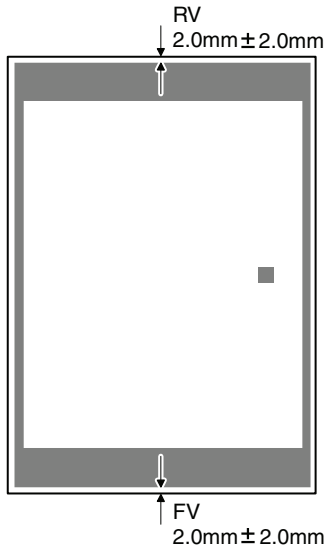
3) Set A4 (11" x 8.5") paper in the paper feed tray selected in procedure 2).

4) Press [EXECUTE] key.

The adjustment pattern is printed.

5) Check that the adjustment pattern image is printed in the correct position.

Measure the dimension of the void area in the front and the rear frame direction of the adjustment pattern, and check that all the following conditions are satisfied.



RV: REAR VOID AREA

FV: FRONT VOID AREA

$RV + FV \leq 4.0mm$

$RV = 2.0 \pm 2.0mm$

$FV = 2.0 \pm 2.0mm$

If the above requirement is not met, do the following steps.

6) Change the adjustment value.

Enter the adjustment value and press the [OK] key or the [EXECUTE] key.

When [EXECUTE] key is pressed, the adjustment pattern is printed.

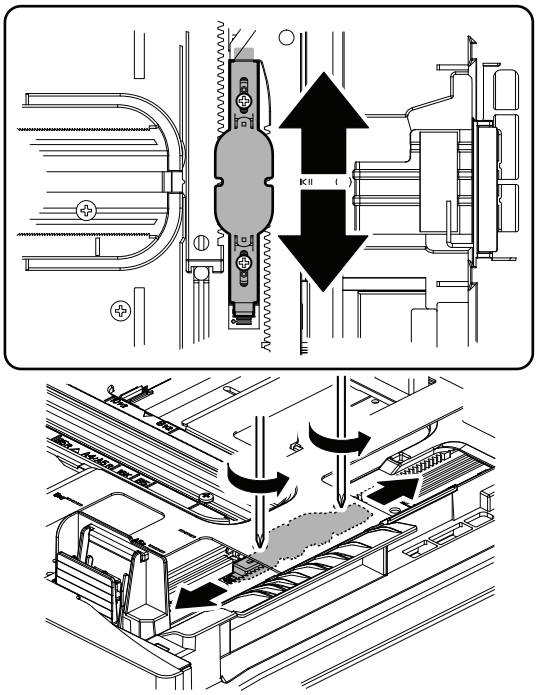
When the adjustment value is increased, the adjustment pattern is shifted to the front frame side. When it is decreased, the adjustment pattern is shifted to the rear frame side.

When the set value is changed by 1, the shift distance is changed by about 0.1mm.

Repeat procedures 3) - 6) until the conditions of procedure 5) are satisfied.

In case a satisfactory result cannot be obtained by repeating the above procedures, perform the following procedure.

7) Loosen the paper feed tray off-center adjustment screws (2 pcs.) at the center section of the lift plate of the paper feed tray, and change the gear unit position in the front/rear frame direction. Repeat the adjustment procedures from 4).



Note

Normally if the adjustment is executed by ADJ 4 (automatic adjustment), there is no need to execute this adjustment.

Only when the manual adjustment is required, execute this adjustment.

In other words, this manual adjustment is executed when a satisfactory result is not obtained from the automatic adjustment (ADJ 4).

ADJ 16 Scan image magnification ratio adjustment (Manual adjustment)

Note

Normally if the adjustment is executed by ADJ 4 (automatic adjustment), there is no need to execute this adjustment.

Only when the manual adjustment is required, execute this adjustment.

In other words, this manual adjustment is executed when a satisfactory result is not obtained from the automatic adjustment (ADJ 4).

16-A Scan image magnification ratio adjustment (main scanning direction) (Manual adjustment) (Document table mode)

Important

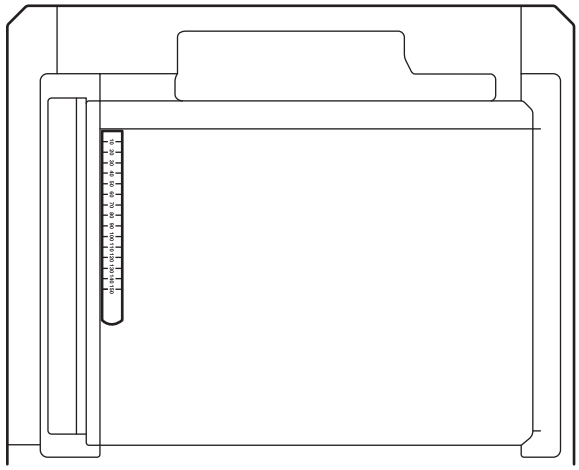
If the default adjustment value of the scan image magnification ration adjustment (main scanning direction) of SIM 48-1, copy image quality may be degraded. Therefore, this adjustment must be executed only when there is a special necessity.

This adjustment must be performed in the following cases:

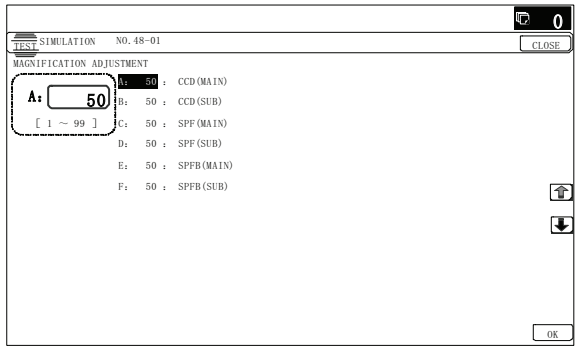
* When the copy magnification ratio in the copy image main scanning direction is not properly adjusted.
* When the scanner motor is replaced.
* U2 trouble has occurred.
* When the scanner control PWB is replaced.
* When the EEPROM of the scanner control PWB is replaced.

Before this adjustment, the focus adjustment (CCD unit installing position adjustment) must have been completed.

1) Place a scale on the document table as shown in the figure below.



2) Enter the SIM 48-1 mode.



3) Make a normal copy and obtain the copy magnification ratio.

   Press [CLOSE] key to shift from the simulation mode to the copy mode, and make a copy.

4) Check that the copy magnification ratio is within the specified range (100 ± 1.0%).

   If the copy magnification ratio is within the specified range (100 ± 1.0%), the adjustment is completed. If the copy magnification ratio is not within the specified range, perform the following procedure.

5) Change the CCD (MAIN) adjustment value of Simulation 48-1.

   When the adjustment value is increased, the copy magnification ratio is increased.

   When the adjustment value is changed by 1, the copy magnification ratio is changed by about 0.02%.

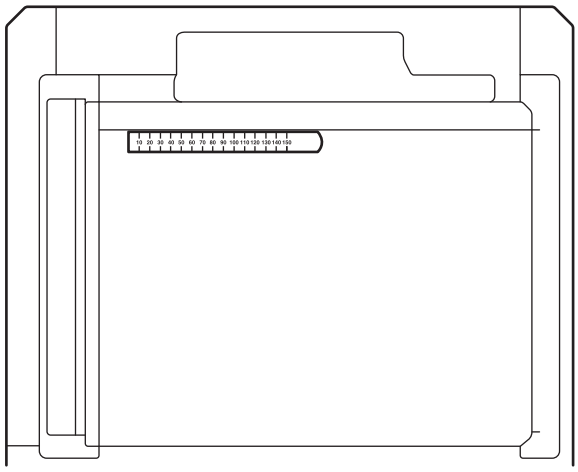
   Repeat the procedures 3) - 5) until the copy magnification ratio is within the specified range (100 ± 1.0%).

16-B Scan image magnification ratio adjustment (sub scanning direction) (Manual adjustment) (Document table mode)

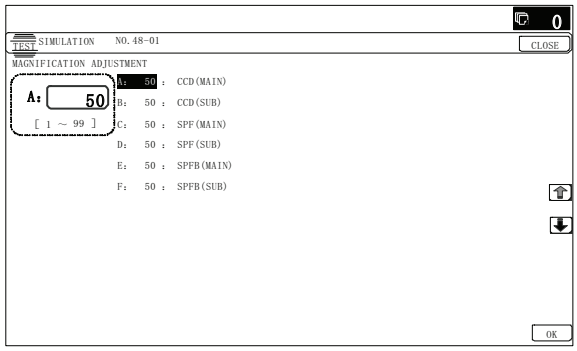
This adjustment must be performed in the following cases:

* When the copy magnification ratio in the copy image sub scanning direction is not properly adjusted.
* When the scanner motor is replaced.
* U2 trouble has occurred.
* When the scanner control PWB is replaced.
* When the EEPROM of the scanner control PWB is replaced.

1) Place a scale on the document table as shown in the figure below.

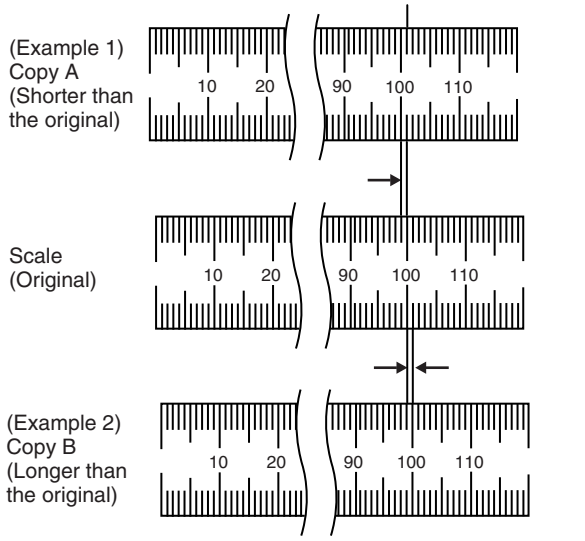


2) Enter the SIM 48-1 mode.



3) Make a normal copy and obtain the copy magnification ratio.
Go to the copy mode, and make a copy.

$$\text{Copy magnification ratio} = \frac{\text{(Original dimension - Copy dimension)}}{\text{Original dimension}} \times 100\%$$



4) Check that the copy magnification ratio is within the specified range (100 ± 1.0%).
If the copy magnification ratio is within the specified range (100 ± 1.0%), the adjustment is completed. If the copy magnification ratio is not within the specified range, perform the following procedure.

5) Change the CCD (SUB) adjustment value of Simulation 48-1.
When the adjustment value is increased, the copy magnification ratio in the sub scanning direction is increased.
When the adjustment value is changed by 1, the copy magnification ratio is changed by about 0.1%.

Repeat the procedures 3) - 5) until the copy magnification ratio is within the specified range (100 ± 1.0%).

16-C Scan image magnification ratio adjustment (main scanning direction) (Manual adjustment) (RSPF mode)

This adjustment must be performed in the following cases:

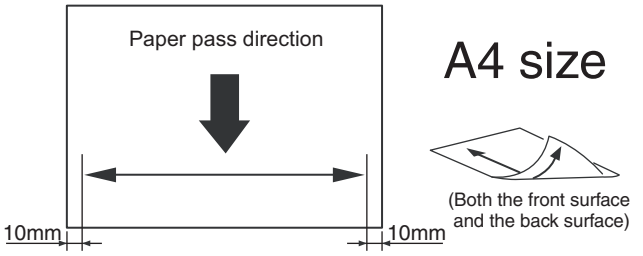
* When the scan control PWB is replaced.
* When the EEPROM on the scan control PWB is replaced.
* When U2 trouble occurs.
* When the copy magnification ratio of the RSPF mode copy image in the main scanning direction is not proper.
* When the RSPF is disassembled.

a. Adjustment procedures

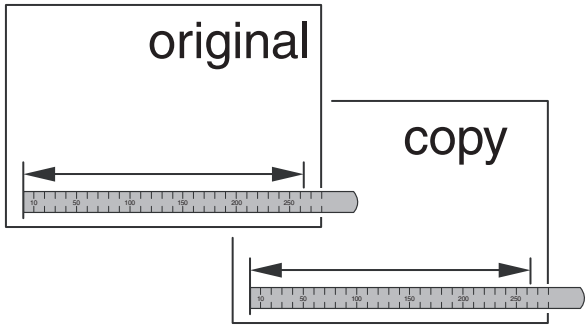
1) Place the duplex adjustment chart shown below on the document tray of the RSPF.

   The adjustment chart is prepared by the following procedures.

   Use A4 (11" x 8.5") paper, and put marks on both sides and both surfaces of the paper at 10mm from each edge.



2) Make a duplex copy at the normal ratio on A4 paper.
3) Measure the images on the copy paper and the original images.



4) Obtain the image magnification ratio according to the following formula:

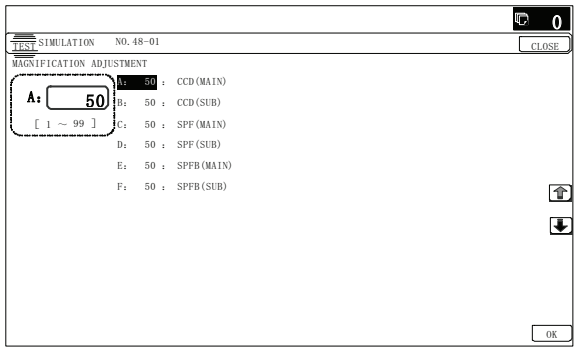
   Image magnification ratio = Original size / Original size x 100 (%)

   Image magnification ratio = 99 / 100 x 100 = 99 (%)

   If the image magnification ratio is within the specified range (100 ± 0.8%), there is no need to perform the adjustment.

   If it is not within the specified range, perform the following procedures.

5) Enter the SIM 48-1 mode.



RSPF

Item	Display	Content	Setting range	Default value
A	CCD(MAIN)	SCAN main scanning magnification ratio adjustment (CCD)	1 - 99	50
B	CCD(SUB)	SCAN sub scanning magnification ratio adjustment (CCD)	1 - 99	50
C	SPF(MAIN)	RSPF document front surface magnification ratio adjustment (Main scan)	1 - 99	50
D	SPF(SUB)	RSPF document front surface magnification ratio adjustment (Sub scan)	1 - 99	50
E	SPFB(MAIN)	RSPF document back surface magnification ratio adjustment (Main scan)	1 - 99	50
F	SPFB(SUB)	RSPF document back surface magnification ratio adjustment (Sub scan)	1 - 99	50

6) Select an adjustment item of SPF (MAIN)/SPFB (MAIN) with the scroll key.

   SPF (MAIN) Main scanning direction image magnification ratio (Front surface)
   SPFB (MAIN) Main scanning direction image magnification ratio (Back surface)

7) Enter an adjustment value with 10-key, and press [OK] key.

   When the adjustment value is increased, the image magnification ratio is increased. When the adjustment value is changed by 1, the image magnification ratio is changed by 0.02%.

8) Make a normal copy and obtain the copy magnification ratio.

Repeat the procedures of 1) - 8) until a satisfactory result is obtained.

16-D Scan image magnification ratio adjustment (sub scanning direction) (Manual adjustment) (RSPF mode)

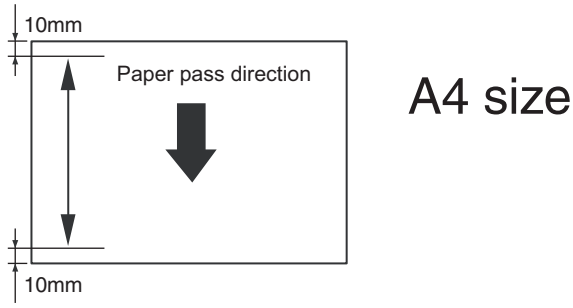
This adjustment must be performed in the following cases:

* When the SCAN CONTROL PWB is replaced.
* When the EEPROM on the SCAN CONTROL PWB is replaced.
* When U2 trouble occurs.
* When the copy magnification ratio of the RSPF mode copy image in the sub scanning direction is not proper.
* When the RSPF is disassembled.

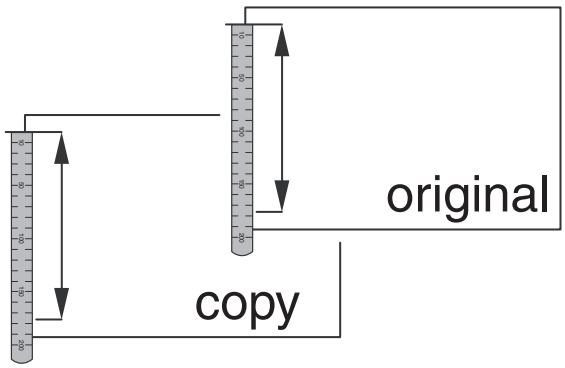
1) Place the duplex adjustment chart shown below on the document tray of the RSPF.

   The adjustment chart is prepared by the following procedures.

   Use A4 (11" x 8.5") paper, and put marks on both sides and both surfaces of the paper at 10mm from each edge.



2) Make a duplex copy at the normal ratio on A4 paper.
3) Measure the images on the copy paper and the original images.



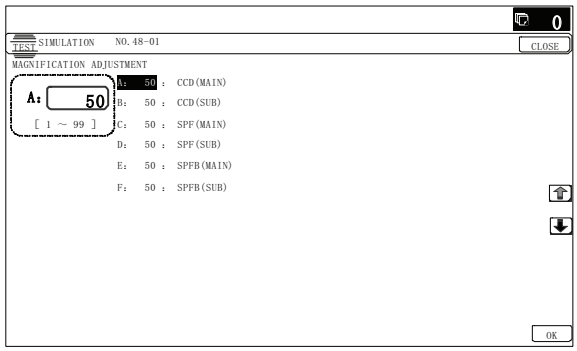
4) Obtain the image magnification ratio according to the following formula:

   Image magnification ratio = Original size / Original size x 100 (%)

   Image magnification ratio = 99 / 100 x 100 = 99 (%)

   If the image magnification ratio is within the specified range (100 ± 0.8%), there is no need to perform the adjustment.

   If it is not within the specified range, perform the following procedures.
5) Enter the SIM 48-1 mode.



Item	Display	Content	Setting range	Default value
A	CCD(MAIN)	SCAN main scanning magnification ratio adjustment (CCD)	1 - 99	50
B	CCD(SUB)	SCAN sub scanning magnification ratio adjustment (CCD)	1 - 99	50
C	SPF(MAIN)	RSPF document front surface magnification ratio adjustment (Main scan)	1 - 99	50
D	SPF(SUB)	RSPF document front surface magnification ratio adjustment (Sub scan)	1 - 99	50
E	SPFB(MAIN)	RSPF document back surface magnification ratio adjustment (Main scan)	1 - 99	50
F	SPFB(SUB)	RSPF document back surface magnification ratio adjustment (Sub scan)	1 - 99	50

6) Select an adjustment item with the scroll key.

SPF (SUB)	Sub scanning direction image magnification ratio (Front surface)
SPFB (SUB)	Sub scanning direction image magnification ratio (Back surface)

7) Enter an image magnification ratio adjustment value with 10-key, and press [OK] key.

   When the adjustment value is increased, the image magnification ratio is increased.

   When the adjustment value is changed by 1, the image magnification ratio is changed by 0.1%.
8) Make a normal copy and obtain the copy magnification ratio.

Repeat the procedures of 1) - 8) until a satisfactory result is obtained.

ADJ 17 Scan image off-center adjustment (Manual adjustment)

Note

Normally if the adjustment is executed by ADJ 4 (automatic adjustment), there is no need to execute this adjustment.

Only when the manual adjustment is required, execute this adjustment.

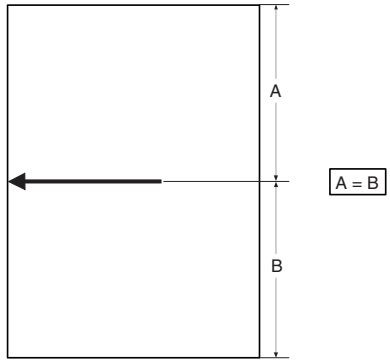
In other words, this manual adjustment is executed when a satisfactory result is not obtained from the automatic adjustment (ADJ 4).

17-A Scan image off-center adjustment (Manual adjustment) (Document table mode)

This adjustment must be performed in the following cases:

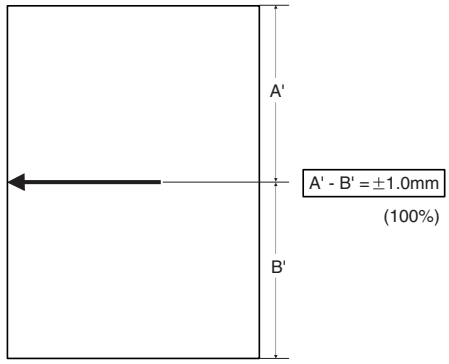
* When the scanner (reading) section is disassembled.
* When the scanner (reading) unit is replaced.
* When a U2 trouble occurs.
* When the scanner control PWB is replaced.
* When the EEPROM on the scanner control PWB is replaced.

1) Make a copy of the adjustment chart (made by yourself) in the adjustment mode (document table).



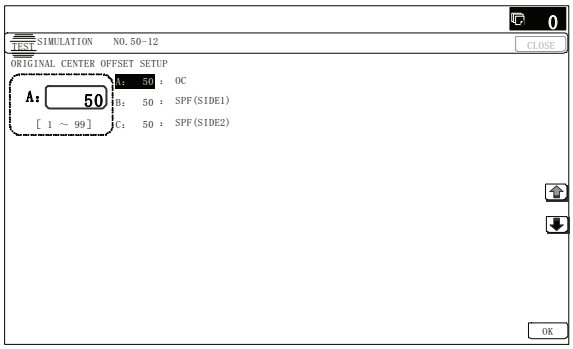
2) Check the copy image center position.

   If A - B = ± 1.0mm, the adjustment is not required.



   If the above condition is not satisfied, perform the following procedures.

3) Enter the SIM 50-12 mode.



4) Select the adjustment mode OC with the scroll key.
5) Enter the adjustment value with 10-key, and press [OK] key.
   The entered value is set.
   When the set value is increased, the main scanning print position is shifted to the front side by 0.1mm.
6) Go to the copy mode, and make a copy.

Repeat the procedures of 1) - 6) until the above condition is satisfied.

17-B Scan image off-center adjustment (Manual adjustment) (RSPF mode)

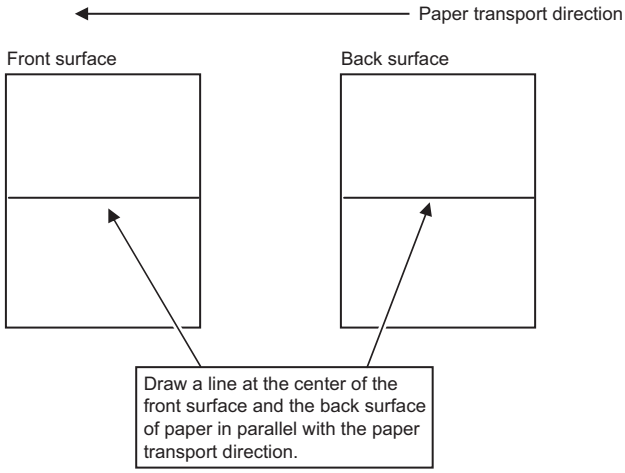
This adjustment must be performed in the following cases:

* When the scan control PWB is replaced.
* When the EEPROM on the scan control PWB is replaced.
* When the scanner (reading) section is disassembled.
* When the scanner (reading) section is replaced.
* When U2 trouble occurs.
* When the RSPF section is disassembled.
* When the RSPF unit is replaced.

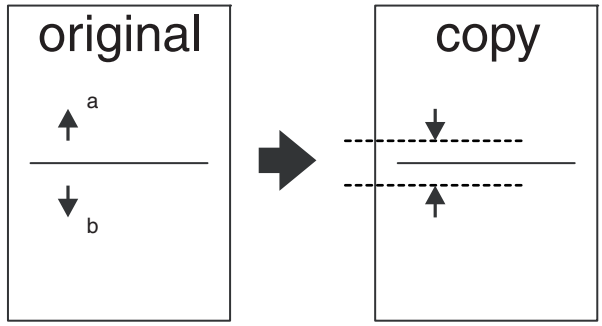
Important

To execute this adjustment, it is required that the ADJ 17A Scan image off-center adjustment (Document table mode) must have been properly adjusted.

1) Prepare the adjustment chart.
   Draw a line at the center of the front surface and the back surface of A4 (11" x 8.5") paper in parallel with the paper transport direction.


Paper transport direction
Front surface
Back surface
Draw a line at the center of the front surface and the back surface of paper in parallel with the paper transport direction.

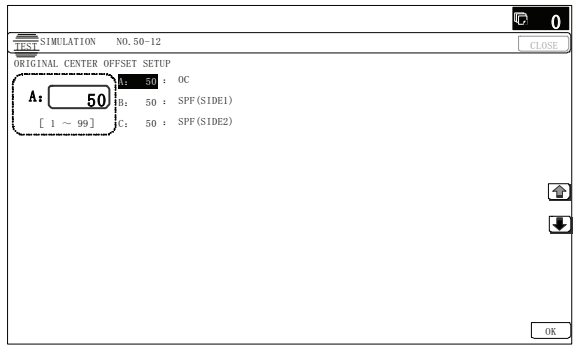
2) Set the adjustment chart to the RSPF.
3) Make a duplex copy in the normal magnification ratio from the manual paper feed tray, and check the image position on the front surface and the back surface of the copy paper.



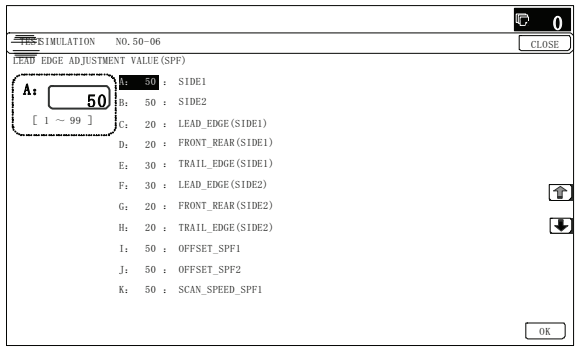
If the difference is within the range of 0 ± 2.7mmm there is no need to perform the adjustment.
If the adjustment is required, perform the following procedures.

4) Enter the SIM 50-12 or 50-6 mode.

(SIM50-12)



(SIM50-6)



SIM50-12

Item	Display	Content	Setting range	Default value
A	OC	Document table image off-center adjustment	1 - 99	50
B	SPF(SIDE1)	SPF front surface image off-center adjustment	1 - 99	50
C	SPF(SIDE2)	SPF back surface image off-center adjustment	1 - 99	50

A - C: When the adjustment value is increased, the image position is shifted to the rear frame side.
1step = 0.1mm

SIM50-6

Item/Display			Content	Setting range	Default value
A	SIDE1		Front surface document scan position adjustment (CCD)	1 - 99	50
B	SIDE2		Back surface document scan position adjustment (CCD)	1 - 99	50
C	Image loss amount setting SIDE1	LEAD_EDGE (SIDE1)	Front surface lead edge image loss amount setting	0 - 99	20
D		FRONT_REAR (SIDE1)	Front surface side image loss amount setting	0 - 99	20
E		TRAIL_EDGE (SIDE1)	Front surface rear edge image loss amount setting	0 - 99	40
F	Image loss amount setting SIDE2	LEAD_EDGE (SIDE2)	Back surface lead edge image loss amount setting	0 - 99	20
G		FRONT_REAR (SIDE2)	Back surface side image loss amount setting	0 - 99	20
H		TRAIL_EDGE (SIDE2)	Back surface rear edge image loss amount setting	0 - 99	40
I	OFFSET_SPF1		RSPF front surface document off-center adjustment	1 - 99	50
J	OFFSET_SPF2		RSPF back surface document off-center adjustment	1 - 99	50
K	SCAN_SPEED_SPF1		RSPF document front surface magnification ratio adjustment (Sub scan)	1 - 99	50
L	SCAN_SPEED_SPF2		RSPF document back surface magnification ratio adjustment (Sub scan)	1 - 99	50

* Item A, B: When the adjustment value is increased, the scan timing is delayed.
* Item C - H: When the adjustment value is increased, the image loss is increased.
* Item A - H: 1 step = 0.1mm change
* The SPF rear edge image loss setting is provided for countermeasures against the case when shades are produced.

5) Select an adjustment mode with the scroll key.

(SIM50-12)

SPF(SIDE1) Front surface mode
SPF(SIDE2) Back surface mode

(SIM50-6)

OFFSET SPF1 Front surface mode
OFFSET SPF2 Back surface mode

6) Enter an adjustment value with 10-key, and press [OK] key.
(Change for change in the adjustment value: 0.1mm/step)
(When the adjustment value is increased, the print image is shifted to the rear.)

Repeat the procedures of 2) - 6) until a satisfactory result is obtained.

ADJ 18 Copy image position and image loss adjustment (Manual adjustment)

Note

Normally if the adjustment is executed by ADJ 4 (automatic adjustment), there is no need to execute this adjustment.

Only when the manual adjustment is required, execute this adjustment.

In other words, this manual adjustment is executed when a satisfactory result is not obtained from the automatic adjustment (ADJ 4).

18-A Copy image position, image loss, and void area adjustment (Manual adjustment) (Document table mode)

This adjustment must be performed in the following cases:

* When the scanner (reading) section is disassembled.
* When the scanner (reading) unit is replaced.
* When the LSU is replaced or removed.
* When the registration roller section is disassembled.
* U2 trouble has occurred.
* The PCU PWB has been replaced.
* The EEPROM of the PCU PWB has been replaced.
* The scanner control PWB has been replaced.
* The EEPROM on the scanner control PWB has been replaced.

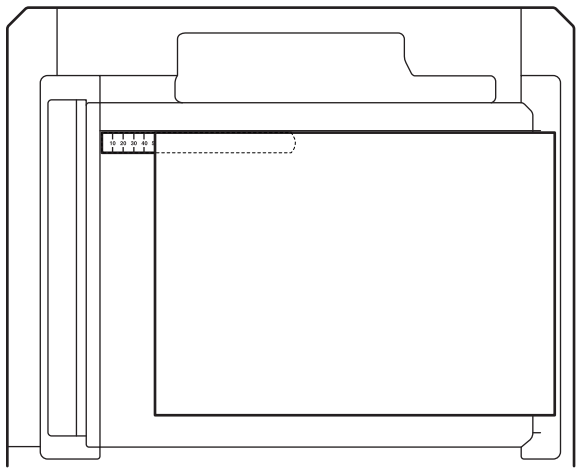
Note

Before executing this adjustment, be sure to confirm that the ADJ 4/ADJ 5 Print engine image skew, image position, image magnification ratio, void area adjustments has been completed normally.

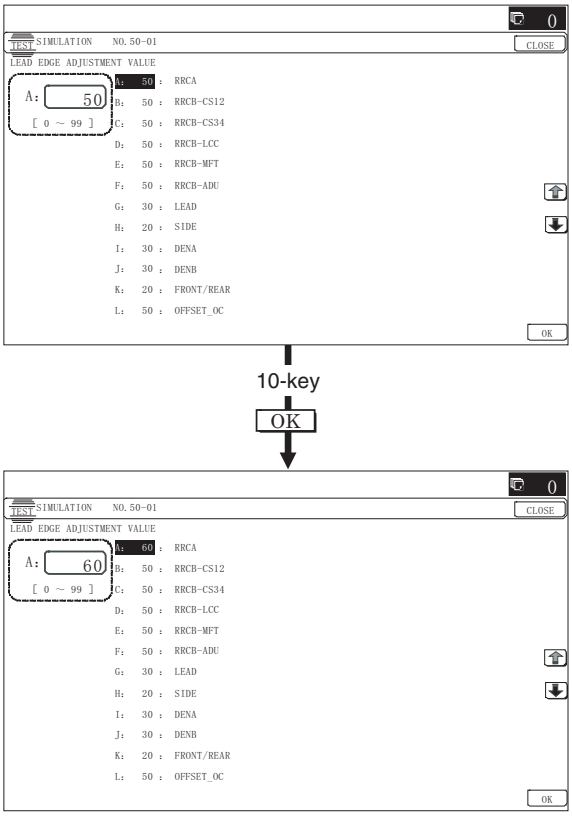
1) Place a scale on the document table as shown in the figure below.

Place a scale so that it is in parallel with the scanning direction and that its lead edge is in contact with the document guide plate.

Place white paper on the document table so that the scale lead edge can be seen.



2) Enter the SIM 50-1 mode.



3) Set RRCA, LEAD, and SIDE to the default values.

Item/Display			Content		Setting range	Default value
A	Lead edge adjust-ment value	RRCA	Document lead edge reference position (OC)		0 - 99	50
B		RRCB-CS1	Regis-tration motor ON timing adjust-ment	Standard Tray	1 - 99	60
C		RRCB-DSK		Desk	1 - 99	60
D		RRCB-LCC		LCC	1 - 99	60
E		RRCB-MFT		Manual paper feed	1 - 99	60
F		RRCB-ADU		ADU	1 - 99	60
G	Image loss area setting value	LEAD	Lead edge image loss area setting		0 - 99	40
H		SIDE	Side image loss area adjustment		0 - 99	20
I	Void area adjust-ment	DENA	Lead edge void area adjustment		1 - 99	40
J		DENB	Rear edge void area adjustment		1 - 99	30
K		FRONT/ REAR	FRONT/REAR void area adjustment		1 - 99	20
L	Off-center adjust-ment	OFFSET_ OC	OC document off-center adjustment		1 - 99	50
M	Magnifi-cation ratio correction	SCAN_ SPEED_OC	SCAN sub scanning magnification ratio adjustment (CCD)		1 - 99	50
N	Sub scanning direction print area correction value	DENB-MFT	Manual feed correction value		1 - 99	50
O		DENB-CS1	Tray 1 correction value		1 - 99	50
P		DENB-CS2	Tray 2 correction value		1 - 99	50
Q		DENB-CS3	Tray 3 correction value		1 - 99	50
R		DENB-CS4	Tray 4 correction value		1 - 99	50
S		DENB-LCC	LCC correction value		1 - 99	50
T		DENB-ADU	ADU correction value		1 - 99	55
U		DENB-HV	Heavy paper correction value		1 - 99	50

4) Perform the image lead edge reference position adjustment.

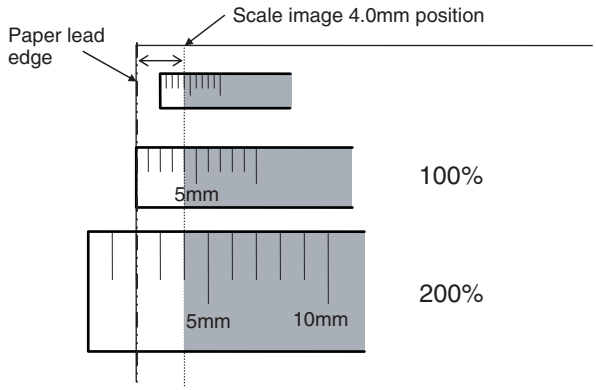
Shift to the copy mode, and make a copy at each of 100% and 200% in the document table mode.

When the adjustment value of RRCA is proper, the lead edge image from 4.0mm is not copied in either of 100% and 200% copy scale.

If not, change and adjust the RRCA value.

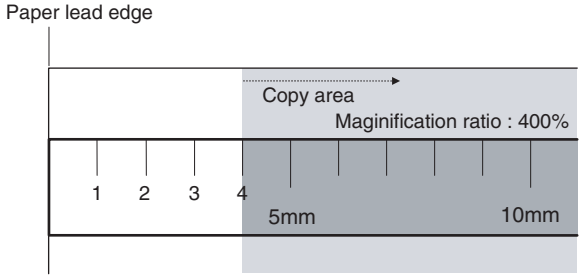
(Adjust so that the lead edge image from 4.0mm is not copied in either of different copy magnification ratios.)

Repeat the above procedures until a satisfactory result is obtained.



5) Image loss adjustment

When the adjustment item of the image loss below is set to the default value, it is adjusted to the standard state. If it is not in the below standard state, or when it is set to a desired value, change these adjustment items.



Void area: 4.0mm, Image loss: 4.0mm

Item/ Display	Content		Adjustment range	De-fault value	Standard adjustment value
LEAD	Image loss adjustment	Lead edge image loss adjustment	0 - 99	40	4.0 ± 1.0mm
SIDE		Side image loss adjustment	0 - 99	20	2.0 ± 1.0mm

When the adjustment value is increased, the image loss is increased. When the adjustment value is decreased, the image loss is decreased.

When the adjustment value is changed by 1, the void area is changed by 0.1mm.

18-B Image scanning position adjustment (Manual adjustment) (RSPF mode)

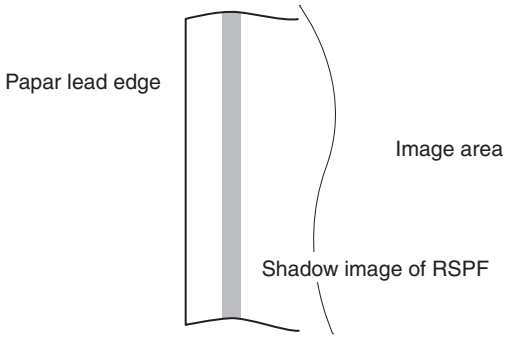
This adjustment must be performed in the following cases:

* When the scan control PWB is replaced.
* When the EEPROM on the scan control PWB is replaced.
* When the scanner (reading) section is disassembled.
* When the scanner (reading) section is replaced.
* When U2 trouble occurs.
* When the RSPF section is disassembled.
* When the RSPF unit is replaced.

This simulation is to adjust the scanning position when scanning in the RSPF mode.

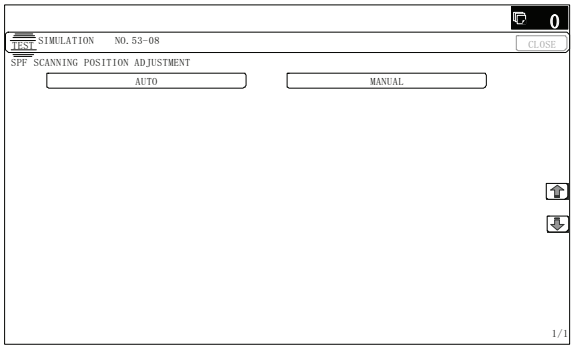
If this adjustment is made improperly, the scanner stop position is shifted from the specified position and a shade of the document table may be reflected on the lead edge section of the scan image in the RSPF mode.

1) Make a copy in the RSPF mode, and check for any shade on the lead edge section of the copy image.



If there is any shade of the document table on the lead edge section of the copy image, perform the following procedures.

2) Enter the SIM 53-8 mode, and press [MANUAL] key.



3) Enter an adjustment value with 10-key, and press [OK] key.

When the set value is increased, the distance from the home position to the RSPF scanning position is increased. When the set value is changed by 1, the scanning position is changed by 0.1mm.

Perform the procedures of 1) - 3) until a satisfactory result is obtained.

Important

After execution of this adjustment, be sure to execute ADJ 18C Copy image position, image loss, void area adjustment (Manual adjustment) (RSPF mode).

18-C Copy image position, image loss, void area adjustment (Manual adjustment) (RSPF mode)

This adjustment must be performed in the following cases:

* When the scan control PWB is replaced.
* When the EEPROM on the scan control PWB is replaced.
* When the scanner (reading) section is disassembled.
* When the scanner (reading) unit is replaced.
* When U2 trouble occurs.
* When the RSPF section is disassembled.
* When the RSPF unit is replaced.

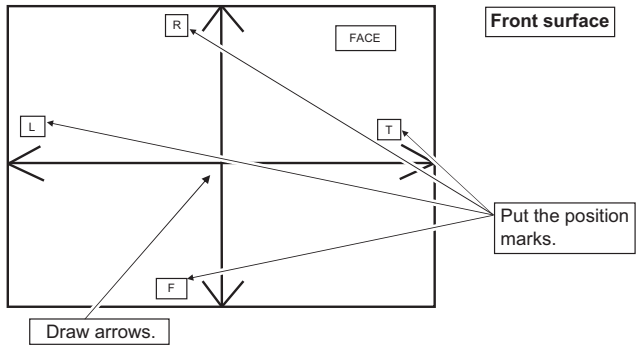
a. Adjustment procedures

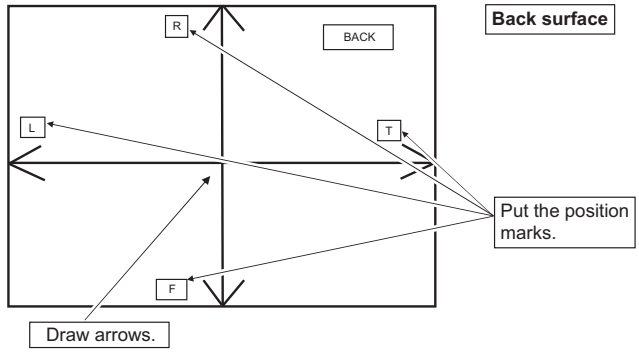
1) Prepare the adjustment chart.

The adjustment chart can be made by the following procedures.

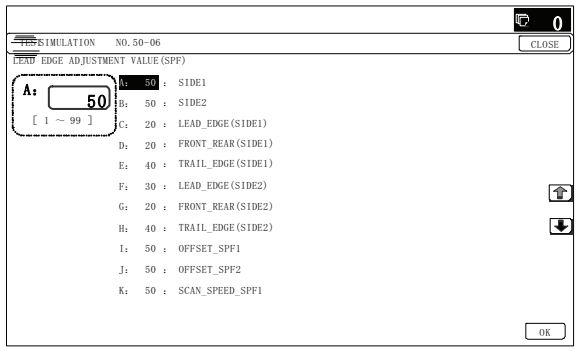
Use A4 (11" x 8.5") paper and draw arrow marks vertically and horizontally on the front and the back surfaces.

At the same time, put marks of the lead edge, the trail edge, the front end, and the rear end as well as the identification marks of the front surface and the back surface.





2) Enter the SIM 50-6 mode.



Item/Display			Content	Setting range	Default value
A	SIDE1		Front surface document scan position adjustment (CCD)	1 - 99	50
B	SIDE2		Back surface document scan position adjustment (CCD)	1 - 99	50
C	Image loss amount setting SIDE1	LEAD_EDGE (SIDE1)	Front surface lead edge image loss amount setting	0 - 99	20
D		FRONT_REAR (SIDE1)	Front surface side image loss amount setting	0 - 99	20
E		TRAIL_EDGE (SIDE1)	Front surface rear edge image loss amount setting	0 - 99	40
F	Image loss amount setting SIDE2	LEAD_EDGE (SIDE2)	Back surface lead edge image loss amount setting	0 - 99	20
G		FRONT_REAR (SIDE2)	Back surface side image loss amount setting	0 - 99	20
H		TRAIL_EDGE (SIDE2)	Back surface rear edge image loss amount setting	0 - 99	40
I	OFFSET_SPF1		RSPF front surface document off-center adjustment	1 - 99	50
J	OFFSET_SPF2		RSPF back surface document off-center adjustment	1 - 99	50
K	SCAN_SPEED_SPF1		RSPF document front surface magnification ratio adjustment (Sub scan)	1 - 99	50
L	SCAN_SPEED_SPF2		RSPF document back surface magnification ratio adjustment (Sub scan)	1 - 99	50

* Item A, B: When the adjustment value is increased, the scan timing is delayed.

* Item C - H: When the adjustment value is increased, the image loss is increased.

* Item A - H: 1 step = 0.1mm change

* The RSPF rear edge image loss setting is provided for countermeasures against the case when shades are produced.

(Lead edge image loss adjustment)

1) Set the lead edge image loss adjustment values (LEAD EDGE (SIDE1/SIDE2) on the front surface and the back surface to the following values.

(Standard set value)

TRAIL EDGE (SIDE 1):

40 Lead edge image loss set value (Front surface)

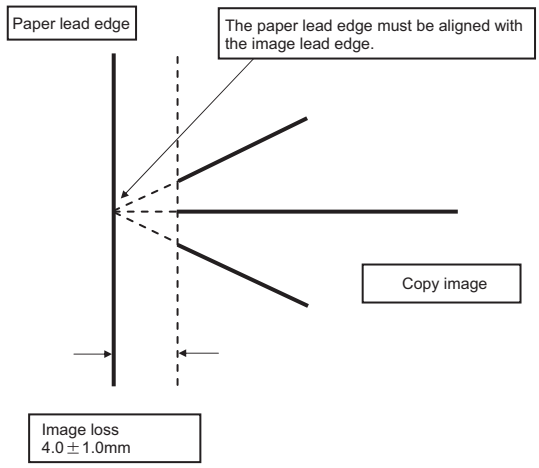
TRAIL EDGE (SIDE 2):

40 Lead edge image loss set value (Back surface)

(When the set value is increased, the lead edge image loss is increased.)

(Change for change in the set value: 0.1mm/step)

2) Make a duplex copy in 100% in the RSPF mode. Check to confirm that the lead edge image loss is within 4.0 ± 1.0mm on the front surface and the back surface. The paper lead edge must be aligned with the presumed image lead edge.



If the above condition is not satisfied, perform the following procedure.

3) Enter the adjustment value of SIDE1/SIDE2 with 10-key, and press [OK] key.

Adjust so that the paper lead edge is aligned with the presumed image lead edge.

SIDE1: Front surface lead edge scan position adjustment

SIDE2: Back surface lead edge scan position adjustment

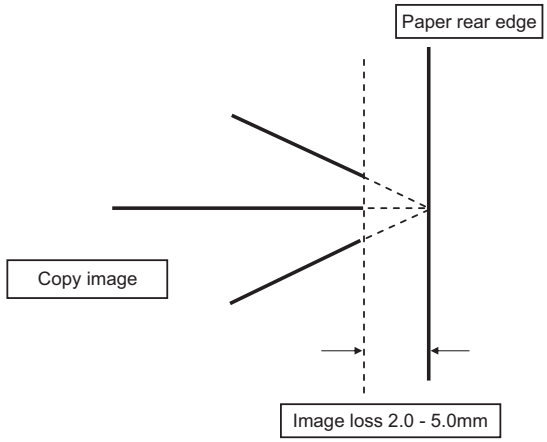
(When the adjustment value is increased, the print image position is shifted to the delaying direction for the paper.)

(Change for change in the set value: 0.1mm/step)

Perform the procedures of 2) - 3) until a satisfactory result is obtained.

(Rear edge image loss adjustment)

1) Make a duplex copy in 100% in the RSPF mode. Check to confirm that the rear edge image loss is 2.0 - 5.0mm on the front surface and the back surface.



If the above condition is not satisfied, perform the following procedure.

2) Enter the adjustment value of TRAIL EDGE (SIDE1/SIDE2) with 10-key, and press [OK] key.

TRAIL EDGE (SIDE 1):

Rear edge image loss adjustment value (Front surface)

TRAIL EDGE (SIDE 2):

Rear edge image loss adjustment value (Back surface)

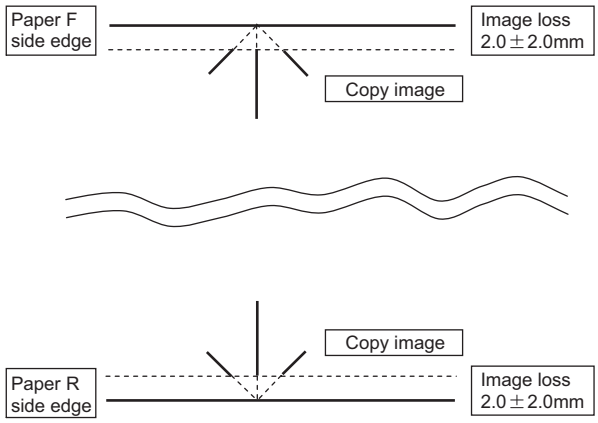
(When the adjustment value is increased, the rear edge image loss is increased.)

(Change for change in the set value: 0.1mm/step)

Perform the procedures of 1) - 2) until a satisfactory result is obtained.

(Front/rear frame direction image loss adjustment)

1) Make a duplex copy in 100% in the RSPF mode. Check to confirm that the image losses on the front frame side and the rear frame side are 2.0 ± 2.0mm on the front surface and the back surface.



If the above condition is not satisfied, perform the following procedure.

2) Enter the adjustment value of FRONT/REAR (SIDE 1) / FRONT/REAR (SIDE 2), and press [OK] key.

FRONT/REAR (SIDE 1):

Front/Rear image loss adjustment value (Front surface)

FRONT/REAR (SIDE 2):

Front/Rear image loss adjustment value (Back surface)

(When the adjustment value is increased, the front/rear image loss is increased.)

(Change for change in the adjustment value: 0.1mm/step)

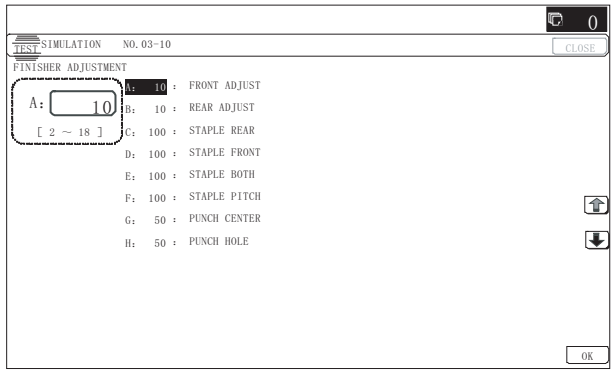
Perform the procedures of 1) - 2) until a satisfactory result is obtained.

ADJ 19 Finisher and punch unit adjustments (alignment, punch hole position, staple position)

This adjustment must be performed in the following cases:

* When the finisher is disassembled.
* When the finisher control PWB is replaced.
* When the punch unit is disassembled.
* When the punch control PWB is replaced.
* When the alignment is improper.
* When the punch hole position is shifted.
* When the staple position is shifted.

1) Enter the SIM 3-10 mode.



2) Select an adjustment target item with the scroll key.

Item/Display		Content	Setting range	Default value	Purpose (Case where the adjustment is required)	Change when the adjustment value is increased or decreased		Change when the adjustment value is changed by 1
A	FRONT ADJUST	Alignment position adjustment (F side alignment plate stop position) (Paper alignment adjustment)	2 - 18	10	This adjustment is used to adjust the paper alignment width when the paper alignment is improper. Alignment is determined by the combination of the both adjustment values of FRONT ADJUST and REAR ADJUST.	F side paper alignment stop position (F/R direction)	When the adjustment value is increased, the alignment plate stop position is shifted to the R side. When the adjustment value is decreased, the alignment plate stop position is shifted to the F side.	0.3665mm
B	REAR ADJUST	Alignment position adjustment (R side alignment plate stop position) (Paper alignment adjustment)	2 - 18	10	When changing the adjustment values of FRONT ADJUST and REAR ADJUST from the default values, be sure to change them by the same variation.	R side paper alignment stop position (F/R direction)	When the adjustment value is increased, the alignment plate stop position is shifted to the F side. When the adjustment value is decreased, the alignment plate stop position is shifted to the R side.	0.3665mm
C	STAPLE REAR	Stapling position adjustment (one position at the rear)	68 - 132	100	When the staple position on the R side is shifted, perform the adjustment.	Staple position (Stapler stop position) (F/R direction)	When the adjustment value is increased, the staple position is shifted to the rear side. When the adjustment value is decreased, the staple position is shifted to the front side.	0.155mm
D	STAPLE FRONT	Stapling position adjustment (one position in front)	68 - 132	100	When the staple position on the F side is shifted, perform the adjustment.	Staple position (Stapler stop position) (F/R direction)	When the adjustment value is increased, the staple position is shifted to the rear side. When the adjustment value is decreased, the staple position is shifted to the front side.	0.155mm
E	STAPLE BOTH	Stapling position adjustment (center position of two positions binding)	68 - 132	100	When the staple off-center is shifted, perform the adjustment.	Staple position (Stapler stop position) (F/R direction)	When the adjustment value is increased, the staple position is shifted to the rear side. When the adjustment value is decreased, the staple position is shifted to the front side.	0.155mm
F	STAPLE PITCH	Stapling position adjustment (staple pitch of two positions binding)	68 - 132	100	When it is required to change the staple interval, perform the adjustment.	Staple position (Stapler stop position) (F/R direction)	When the adjustment value is increased, the staple interval is increased. When the adjustment value is decreased, the staple interval is decreased.	0.155mm
G	PUNCH CENTER	Punch center positioning sensor	37 - 63	50	When the punch off-center is shifted, perform the adjustment.	Punch position (F/R direction)	When the adjustment value is decreased, the punch position is shifted to the front side. When the adjustment value is increased, the punch position is shifted to the rear side.	0.1441mm
H	PUNCH HOLE	Punch hole adjustment (paper transport direction)	42 - 58	50	When the punch hole position is shifted in the transport direction, perform the adjustment.	Punch position (Paper transport direction)	When the adjustment value is increased, the punch position is shifted to the paper lead edge side. When the adjustment value is decreased, the punch position is shifted to the paper rear edge side.	0.2584mm

Saddle stitch finisher

Item/Display		Content	Setting range	Default value	Purpose (Case where the adjustment is required)	Change when the adjustment value is increased or decreased		Change when the adjustment value is changed by 1
A	SADDLE POSITION	Saddle stitch position adjustment	25 - 75	50	The adjustment is executed when the saddle staple position is shifted.	Saddle paper lead edge striking plate stop position (Up-down direction)	When the adjustment value is increased, the stapling position is shifted to the lead edge of transported paper. When the adjustment value is decreased, the stapling position is shifted to the rear edge of transported paper.	0.2mm
B	FOLDING POSITION	Saddle folding position adjustment	25 - 75	50	The adjustment is executed when the saddle folding position is shifted.	Saddle paper lead edge striking plate stop position (Up-down direction)	When the adjustment value is increased, the folding position is shifted to the lead edge of transported paper. When the adjustment value is decreased, the folding position is shifted to the rear edge of transported paper.	0.2mm

Item/Display		Content	Setting range	Default value	Purpose (Case where the adjustment is required)	Change when the adjustment value is increased or decreased		Change when the adjustment value is changed by 1
C	FRONT ADJUST	Alignment position adjustment (front)	35 - 65	50	When the paper alignment capability in the stacker section is improper, the paper alignment width is adjusted.	F side paper alignment plate stop position (F/R direction)	When the adjustment value is increased, the alignment position is shifted to the center. When the adjustment value is decreased, the alignment position is shifted to the outside.	0.2mm
D	REAR ADJUST	Alignment position adjustment (Rear)	35 - 65	50		R side paper alignment plate stop position (F/R direction)	When the adjustment value is increased, the alignment position is shifted to the center. When the adjustment value is decreased, the alignment position is shifted to the outside.	0.2mm
E	STAPLE REAR	Stapling position adjustment (Rear, one position)	25 - 75	50	When the stapling position on the R side is shifted, the adjustment is executed.	Stapling position (stapler stop position) (F/R direction)	When the adjustment value is increased, the distance between the stapling position and the paper edge becomes longer. When the adjustment value is decreased, the distance between the stapling position and the paper edge becomes shorter.	0.2mm
F	STAPLE REAR R	Stapling position adjustment (Rear, one position /R series)	45 - 75	50	When the stapling position on the R side is shifted with R series paper, the adjustment is executed.	Stapling position (stapler stop position) (F/R direction)	When the adjustment value is increased, the distance between the stapling position and the paper edge becomes longer. When the adjustment value is decreased, the distance between the stapling position and the paper edge becomes shorter.	0.2mm
G	STAPLE FRONT	Stapling position adjustment (one position in front)	25 - 75	50	When the stapling position on the F side is shifted, the adjustment is executed.	Stapling position (stapler stop position) (F/R direction)	When the adjustment value is decreased, the distance between the stapling position and the paper edge becomes shorter. When the adjustment value is increased, the distance between the stapling position and the paper edge becomes longer.	0.2mm
H	STAPLE FRONT R	Stapling position adjustment (Front, one position / R series)	25 - 55	50	When the stapling position on the F side is shifted with R series paper, the adjustment is executed.	Stapling position (stapler stop position) (F/R direction)	When the adjustment value is decreased, the distance between the stapling position and the paper edge becomes shorter. When the adjustment value is increased, the distance between the stapling position and the paper edge becomes longer.	0.2mm
I	STAPLE BOTH	Stapling position adjustment (Two positions, center)	45 - 55	50	When the staple off-center is shifted, the adjustment is executed.	Stapling position (stapler stop position) (F/R direction)	When the adjustment value is increased, the stapling position is shifted to the front. When the adjustment value is decreased, the stapling position is shifted to the rear.	0.2mm
J	STAPLE PITCH	Stapling position adjustment (Two positions, pitch)	35 - 62	50	When the stapling interval is to be changed, the adjustment is executed.	Stapling position (stapler stop position) (F/R direction)	When the adjustment value is increased, the pitch of two points is widened. When the adjustment value is decreased, the pitch of two points is narrowed.	0.2mm
K	PUNCH CENTER	Punch center adjustment	35 - 65	50	When the punch off-center is shifted, the adjustment is executed.	Punching position (F/R direction)	When the adjustment value is increased, the hole position is shifted to the front. When the adjustment value is decreased, the hole position is shifted to the rear.	0.2mm

Item/Display		Content	Setting range	Default value	Purpose (Case where the adjustment is required)	Change when the adjustment value is increased or decreased		Change when the adjustment value is changed by 1
L	PUNCH HOLE	Punch hole position adjustment	30 - 60	50	When the punch hole position is shifted in the transport direction, the adjustment is executed.	Punch position (paper transport direction)	When the adjustment value is increased, the punch hole position is shifted to the rear edge of paper. When the adjustment value is decreased, the punch hole position is shifted to the lead edge of paper.	0.2mm
M	SADDLE_ ADJUST_POS	Saddle alignment position adjustment	35 - 65	50	When the paper alignment capability in the saddle section is improper, the paper alignment width is adjusted.	Saddle paper alignment plate stop position (F/R direction)	When the adjustment value is increased, the alignment plate position is shifted to the center. When the adjustment value is decreased, the alignment plate position is shifted to the outside.	0.2mm
N	GRIPPER_ POS	Gripper exit position adjustment	35 - 65	50	When the gripper discharge position is shifted, the adjustment is executed. (When a JAM or trouble occurs, the adjustment is executed.)	Gripper discharge position (Gripper stop position) (F/R direction)	When the adjustment value is increased, the gripper discharge position is shifted to the front. When the adjustment value is decreased, the gripper discharge position is shifted to the rear.	0.2mm

3) Enter an adjustment value and press [OK] key.

4) Cancel the simulation, make a copy in the mode including the adjustment target, and check the adjustment result.

[5] SIMULATION

1. General and purpose

The simulation mode has the following functions, to display the machine operating status, identify the trouble position and causes in an earlier stage, and to efficiently setup and adjust the machine for improved serviceability.

1) Various adjustments
2) Setting of the specifications and functions
3) Canceling troubles
4) Operation check
5) Counters check, setting, clear
6) Machine operating conditions (operation hysteresis), data check, clear.
7) Various (adjustments, setting, operation, counters, etc.) data transport.

The operating procedures and displays depend on the design of the operation panel of the machine.

2. Starting the simulation

18cpm/20cpm/23cpm/31cpm(G) machine

Entering the simulation mode

1) Machine in Copy mode: Select Program key → Asterisk (*) key → Clear key → Asterisk (*) key → Ready for input of main code of simulation.
2) Entering a main code with the 10-key → START key ON.
   Or select a main code with the SIM key on the touch panel.
3) Entering a sub code with the 10-key → START key ON.
4) Select an item with the scroll key and the item key.
5) The machine enters the mode corresponding to the selected item. Press [START] key or [EXECUTE] key to start the simulation operation.

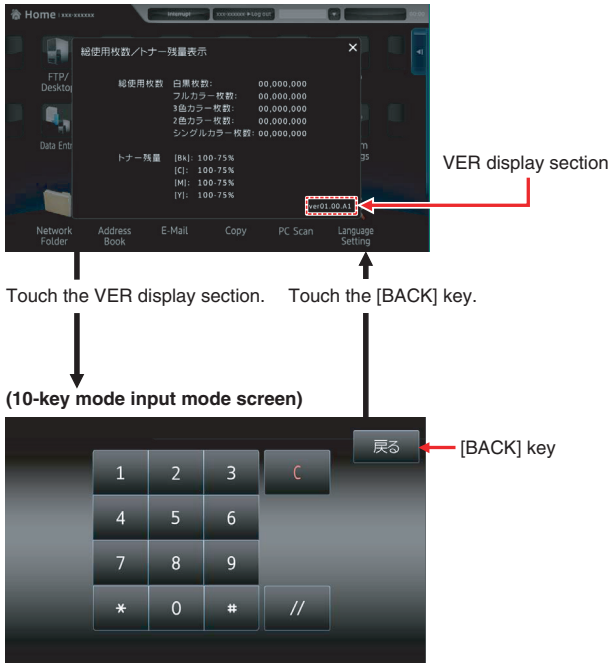
   To cancel the current simulation mode and change the main code and the sub code, press [SYSTEM SETTING] key.

Canceling the simulation mode to return to the normal mode

1) Press [CA] key.

26cpm/36cpm/31cpm(A) machine

1) Double-click the [HOME] key. (Total use quantity/Toner remaining quantity display mode screen)



2) Touch the VER display section. (10-key mode input mode screen)
3) Touch the (#) key → Asterisk (*) key → Clear key → Asterisk (*) key → Ready for input of main code of simulation.
4) Enter a main SIM code with the 10-key pad then touch the START key or select a main code from the SIM key list on the touch panel.
5) Enter a sub code with the 10-key pad, then touch the START key or select a sub code from the code list on the touch panel.
6) Select an item with the scroll key and the item key.
7) The machine enters the mode corresponding to the selected item. Press [START] key or [EXECUTE] key to start the simulation operation.

   To cancel the current simulation mode and change the main code and the sub code, press [BACK] key.

Canceling the simulation mode to return to the normal mode

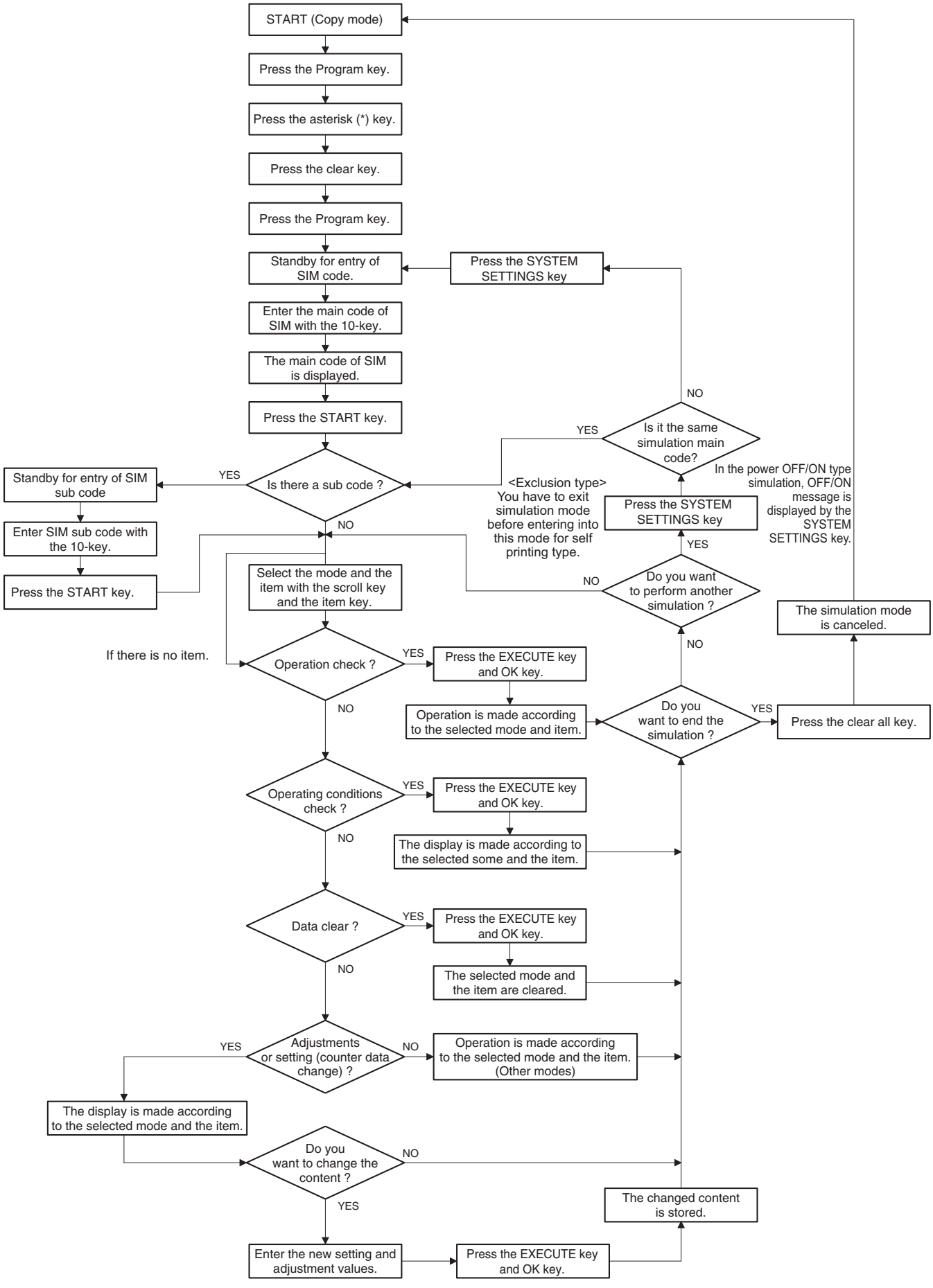
1) Press [EXIT] key.

Important

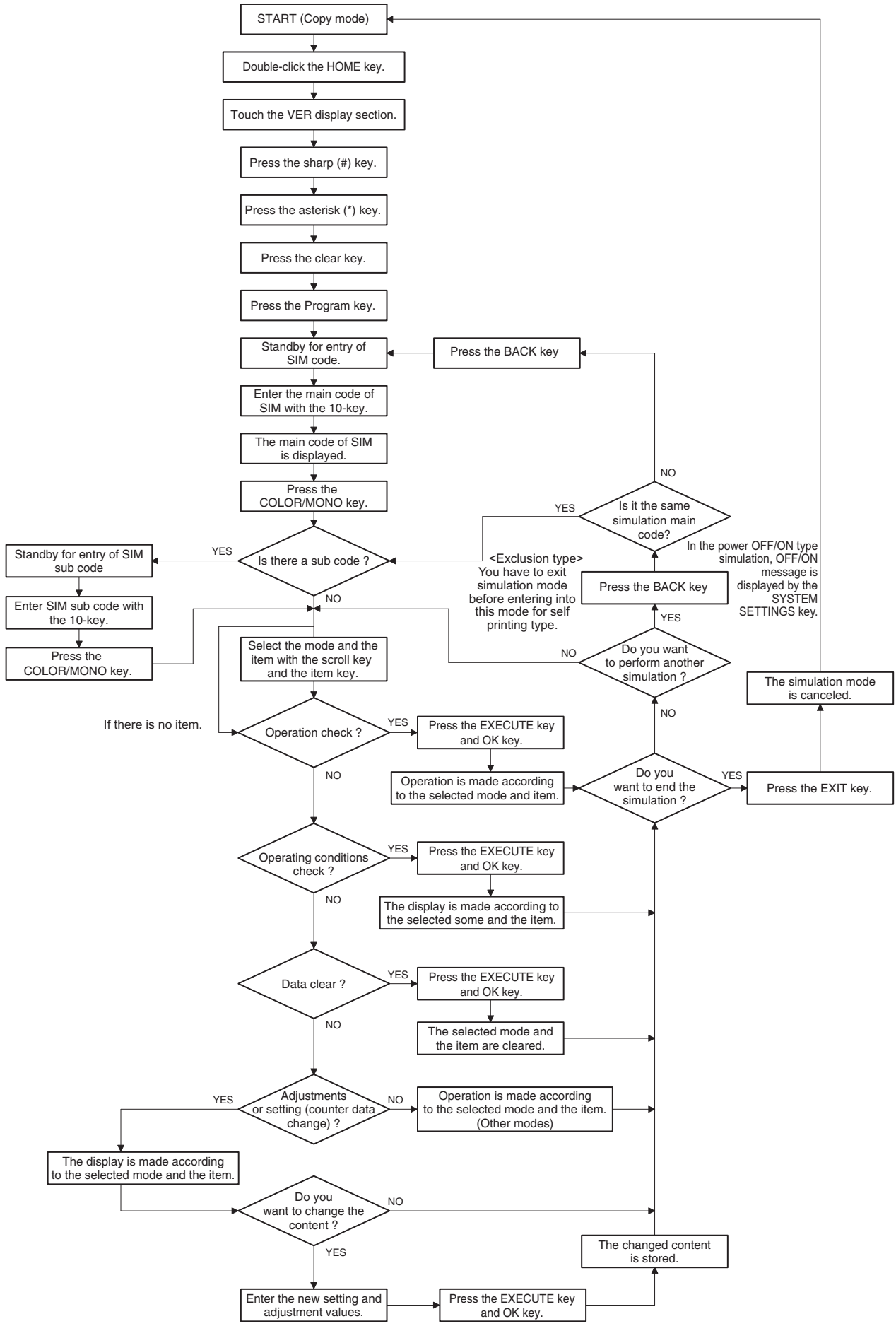
Do not turn OFF the power when the machine is in the simulation mode.

If the power switch should be turned OFF in the simulation mode, a malfunction may be resulted. In this case, turn OFF/ON the main power source.

18cpm/20cpm/23cpm/31cpm(G) machine


START (Copy mode)
Press the Program key.
Press the asterisk (*) key.
Press the clear key.
Press the Program key.
Standby for entry of SIM code.
Press the SYSTEM SETTINGS key
Enter the main code of SIM with the 10-key.
The main code of SIM is displayed.
Press the START key.
NO
YES
Is it the same simulation main code?
YES
Is there a sub code ?
Standby for entry of SIM sub code
Enter SIM sub code with the 10-key.
Press the START key.
NO
<Exclusion type>
You have to exit simulation mode before entering into this mode for self printing type.
Press the SYSTEM SETTINGS key
In the power OFF/ON type simulation, OFF/ON message is displayed by the SYSTEM SETTINGS key.
YES
Select the mode and the item with the scroll key and the item key.
NO
Do you want to perform another simulation ?
The simulation mode is canceled.
If there is no item.
Operation check ?
YES
Press the EXECUTE key and OK key.
NO
Operation is made according to the selected mode and item.
Do you want to end the simulation ?
YES
Press the clear all key.
NO
Operating conditions check ?
YES
Press the EXECUTE key and OK key.
NO
The display is made according to the selected some and the item.
Data clear ?
YES
Press the EXECUTE key and OK key.
NO
The selected mode and the item are cleared.
YES
Adjustments or setting (counter data change) ?
NO
Operation is made according to the selected mode and the item. (Other modes)
The display is made according to the selected mode and the item.
Do you want to change the content ?
NO
YES
The changed content is stored.
Enter the new setting and adjustment values.
Press the EXECUTE key and OK key.

26cpm/36cpm/31cpm(A) machine


START (Copy mode)
Double-click the HOME key.
Touch the VER display section.
Press the sharp (#) key.
Press the asterisk (*) key.
Press the clear key.
Press the Program key.
Standby for entry of SIM code.
Press the BACK key
Enter the main code of SIM with the 10-key.
The main code of SIM is displayed.
Press the COLOR/MONO key.
Is it the same simulation main code?
YES
NO
Is there a sub code ?
YES
Standby for entry of SIM sub code
Enter SIM sub code with the 10-key.
Press the COLOR/MONO key.
NO
<Exclusion type>
You have to exit simulation mode before entering into this mode for self printing type.
Press the BACK key
In the power OFF/ON type simulation, OFF/ON message is displayed by the SYSTEM SETTINGS key.
YES
Select the mode and the item with the scroll key and the item key.
Do you want to perform another simulation ?
NO
YES
The simulation mode is canceled.
If there is no item.
Operation check ?
YES
Press the EXECUTE key and OK key.
NO
Operation is made according to the selected mode and item.
Do you want to end the simulation ?
YES
Press the EXIT key.
NO
Operating conditions check ?
YES
Press the EXECUTE key and OK key.
NO
The display is made according to the selected some and the item.
Data clear ?
YES
Press the EXECUTE key and OK key.
NO
The selected mode and the item are cleared.
Adjustments or setting (counter data change) ?
YES
NO
Operation is made according to the selected mode and the item. (Other modes)
The display is made according to the selected mode and the item.
Do you want to change the content ?
NO
YES
The changed content is stored.
Enter the new setting and adjustment values.
Press the EXECUTE key and OK key.

3. List of simulation codes

Main	Sub	Functions	Section
1	1	Used to check the operation of the scanner (reading) unit and the control circuit.	Scanner (reading)
	2	Used to check the sensors in the scanner (reading) section and the related circuits.	Scanner (reading)
	5	Used to check the operation of the scanner (reading) unit and the control circuit.	Scanner (reading)
2	1	Used to check the operations of the automatic document feeder and the control circuit.	RSPF
	2	Used to check the operations of the sensors and the detectors in the automatic document feeder section and the control circuits.	RSPF
	3	Used to check the operations of the loads in the automatic document feeder and the control circuit.	RSPF
3	2	Used to check the operations of the sensors and the detectors in the finisher and the control circuit.	Finisher
	3	Used to check the operation of the load in the finisher and the control circuit.	Finisher
	10	Used to adjust the finisher.	Finisher
4	2	Used to check the operations of the sensors and detectors in the desk/large capacity tray (LCC), and the control circuit of those.	Desk/Large capacity tray (LCC)
	3	Used to check the operations of the loads in the desk/large capacity tray (LCC), and the control circuit of those.	Desk/Large capacity tray (LCC)
	5	Used to check the operations of the paper feed desk paper transport clutch (DTRC) and the LCC paper transport clutch (LTRC).	Desk/Large capacity tray (LCC)
5	1	Used to check the operation of the display, LCD in the operation panel, and control circuit.	Operation panel
	2	Used to check the operation of the heater lamp and the control circuit.	Fusing
	3	Used to check the operation of the scanner lamp and the control circuit.	Scanner (reading)
	4	Used to check the operation of the discharge lamp and the control circuit.	Process
6	1	Used to check the operations of the load in the paper transport system (clutches and solenoids) and the control circuits.	Paper transport/Paper exit section
	2	Used to check the operations of each fan motor and its control circuit.	Others
	3	Used to check the operations of the transport unit and the control circuit.	Process (Transport)
	6	Used to perform fusing pressure release and applying, and to check the operations of the control circuits.	Fusing
	90	Used to reset the machine to the factory setting. (The scanner is set to the lock enable position)	Scanner
7	1	Used to set the operating conditions of aging.	Others
	6	Used to set the operating intermittent aging cycle.	
	8	Used to display the warm-up time.	
	9	Color setting in the color copy test mode (Used to check the copy operation and the image quality for each color).	
	12	The document reading number of sheets setting (for aging operation)	RSPF
8	1	Used to check and adjust the operations of the developing voltage in each print mode and the control circuit. * When the middle speed is adjusted, the low speed are also adjusted simultaneously.	Process (Developing)
	2	Used to check and adjust the operation of the main charger grid voltage in each printer mode and the control circuit. * When the middle speed is adjusted, the low speed are also adjusted simultaneously.	Process (Charging)
	6	Used to check and adjust the operation of the transport voltage and the control circuit.	Process (Transport)
9	2	Used to check the operations of the sensors and detectors in the paper reverse section (duplex section) and its control circuit.	Duplex
	3	Used to check the operations of the load in the paper reverse section (duplex section) and its control circuit.	Duplex
10	1	Used to check the operations of the toner supply mechanism (toner motor) and the related circuit.	Process (Developing)
13	-	Used to cancel the self-diag "U1" trouble.	
14	-	Used to cancel the self-diag H3, H4, H5 troubles.	
15	-	Used to cancel the self-diag "U6" trouble.	LCC
16	-	Used to cancel the self-diag "U2" trouble.	MFP PWB / PCU PWB / SCU PWB
17	-	Used to cancel the self-diag "PF" trouble.	
21	1	Used to set the maintenance cycle.	
22	1	Used to check the print count value in each section and each operation mode. (Used to check the maintenance timing.)	
	2	Used to check the total number of misfeed and troubles. (When the number of total jam is considerably great, it is judged as necessary for repair.)	
	3	Used to check misfeed positions and the misfeed count of each position. * Presumption of the faulty point by this data is possible.	
	4	Used to check the trouble (self diag) history.	
	5	Used to check the ROM version of each unit (section).	Firmware
	6	Used to output the setting/adjustment data (simulation, FAX soft switch, counter), the firmware version, and the counter list.	
	8	Used to check the number of operations (counter value) of the finisher, the RSPF, and the scan (reading) unit.	
	9	Used to check the number of use (print quantity) of each paper feed section.	Paper feed, ADU, LCC
	10	Used to check the system configuration (option, internal hardware).	
	11	Used to check the use frequency (send/receive) of FAX. (Only when FAX is installed)	FAX
	12	Used to check the RSPF misfeed positions and the number of misfeed at each position. (When the number of misfeed is considerably great, it can be judged as necessary for repair.)	RSPF
	13	Used to check the operating time of the process section (OPC drum, DV unit, toner cartridge) and the fusing unit	Process
	14	Used to display the use status of the toner cartridge.	Process

Main	Sub	Functions	Section
22	18	Used to display the user data delete history.	
	19	Used to check the values of the counters related to the scan - image send.	
	40	Used to display the error code list and the contents.	
	90	Used to output the various set data lists.	
23	2	Used to output the trouble history list of paper jam and misfeed. (If the number of troubles of misfeed is considerably great, the judgment is made that repair is required.)	
	80	Used to check the operation of paper feed and paper transport in the paper feed section and the paper transport section. Used to output the list of the operation status of the sensor and the detectors in the paper feed section and the paper transport section.	Paper feed, Paper transport
24	1	Used to clear the jam counter, and the trouble counter. (After completion of maintenance, clear the counters.)	
	2	Used to clear the number of use (the number of prints) of each paper feed section.	
	3	Used to clear the finisher, RSPF, and the scan (reading) unit counter.	
	4	Used to clear the maintenance counter, the printer counters of the transport unit and the fusing unit. (After completion of maintenance, clear the counters.)	
	5	Used to clear the developer counter. (After replacement of developer, clear the counter.)	
	6	Used to clear the copy counter.	
	9	Used clear the printer mode print counter and the self print mode print counter.	
	10	Used to clear the FAX counter. (Only when FAX is installed)	
	15	Used to clear the counters related to the scan mode and the image send.	
	35	Used to clear the toner cartridge use status data.	
25	1	Used to check the operations of the developing section.	Process (Developing section)
	2	Used to make the initial setting of toner density when replacing developer. (Automatic adjustment)	Image process (Photoconductor/ Developing/Transfer/Cleaning)
	4	Used to display the operation data of the toner supply quantity. (Not used in the market.)	Process
	5	Used to display the toner density correction data. (Not used in the market.)	Process
26	1	Used to set Yes/No of installation of the right paper exit tray.	Paper exit
	2	Used to set the paper size of the large capacity tray (LCC). (When the paper size is changed, this simulation must be executed to change the paper size in software.)	Paper feed
	3	Used to set the specifications of the auditor. (Setting must be made according to the auditor use conditions.)	Auditor
	5	Used to set the count mode of the total counter and the maintenance counter. (A3/11x17 size)	
	6	Used to set the specifications (paper, fixed magnification ratio, etc.) of the destination.	
	7	Used to set the machine ID. (26cpm/36cpm/31cpm(A) machine)	
	10	Used to set the trial mode of the network scanner.	
	18	Used to set Disable/Enable of the toner save mode operation. (For the Japan and the UK versions.)	
	30	Used to set the operation mode corresponding to the CE mark (Europe safety standards). (For slow start to drive the fusing heater lamp)	
	32	Used to set the specifications of the fusing cleaning operation.	Fusing
	35	Used to set the display mode of SIM 22-4 trouble history when a same trouble occurred repeatedly. There are two display modes: display as one trouble and display as several series of troubles.	
	38	Used to set Continue/Stop of print when the maintenance life is reached.	
	41	Used to set Enable/Disable of the magnification ratio automatic select function (AMS) in the center binding mode.	
	49	Used to set the print speed of postcards mode.	
	50	Used to set functions.	
	51	Used to set the specifications of the serial port operation. (For PCI)	
	52	Used to set whether non-printed paper (insertion paper, cover paper) is counted up or not.	
	53	User auto color calibration (color balance adjustment) Inhibit/Allow setting.	
	65	Used to set the finisher alarm mode.	
	69	Used to set the operating conditions for toner near end.	
	71	Used to set the trial mode of the web browsing function. (26cpm/36cpm/31cpm(A) machine)	
	73	Enlargement continuous shoot, A3 wide copy mode image loss (shade delete quantity) adjustment	
	74	Used to set the OSA trial mode.	
	78	Used to set the password of the remote operation panel.	
	79	Used to set YES/NO of the pop-up display of user data delete result.	

Main	Sub	Functions	Section
27	1	Used to set non-detection of communication error (U7-00) with RIC. (FSS function)	
	2	Used to set the sender's registration number and the HOST server telephone number. (FSS function)	
	4	Used to set the initial call and toner order auto send. (FSS function)	
	5	Used to set the machine tag No. (This function allows the host computer to check the machine tag No.) (FSS function)	Communication (RIC/MODEM)
	6	Used to set of the manual service call. (FSS function)	
	7	Used to set of the enable, alert callout. (FSS function)	
	9	Used to set the paper transport time recording YES/NO threshold value and shading gain adjustment retry number. (FSS function)	
	10	Used to clear the trouble prediction history information. (FSS function)	
	11	Used to check the serial communication retry number and the scanner gain adjustment retry number history. (FSS function)	
	12	Used to check the high density, halftone process control and the automatic registration adjustment error history. (FSS Function)	
	13	Used to check the history of paper transport time between sensors. (FSS function)	
	14	Used to set the FSS function connection test mode.	
	15	Used to display the FSS connection status.	
	16	Used to set the FSS alert send.	
	17	Used to set the FSS paper order alert.	
	18	Used to clear the FSS paper feed retry counter.	
30	1	Used to check the operations of the sensors and the detectors in other than the paper feed section and the control circuits.	
	2	Used to check the operations of the sensors and the detectors in the paper feed section and the control circuits.	
33	2	Used to delete the ID (IDM) information of Felica card. (23cpm/31cpm(G) machine only)	
40	2	Manual paper feed tray paper width sensor adjustment.	Paper feed
	7	Used to set the adjustment value of the manual paper feed tray paper width sensor.	Paper feed
41	1	Used to check the operations of the document size sensor and the control circuit.	
	2	Used to adjust the document size sensor detection level.	
	3	Used to check the operations of the document size sensor and the control circuit.	
43	1	Used to set the fusing temperature in each mode.	
	4	Used to set the fusing temperature 2 in each mode. (Continued from SIM 43-1.)	
	20	Used to set the environmental correction under low temperature and low humidity (L/L) for the fusing temperature setting (SIM 43-1) in each paper mode.	
	21	Used to set the environment correction under high temperature and high humidity (H/H) for the fusing temperature setting (SIM 43-1) in each paper mode.	
	22	Used to set the environment correction under low temperature and low humidity (L/L) for the fusing temperature setting (SIM 43-4) in each paper mode.	
	23	Used to set the environment correction under high temperature and high humidity (H/H) for the fusing temperature setting (SIM 43-4) in each paper mode.	
	24	Used to set the correction of the temperature adjustment value of SIM 43-1 and 43-4.	
	31	Used to check the operation of the fusing web cleaning. (36cpm machine)	Fusing
	32	Used to set various items related to the forcible operation of web cleaning when job end. (36cpm machine)	Fusing
44	1	Used to set each correction operation function in the image forming (process) section.	Image process (Photoconductor/ Developing/Transfer/Cleaning)
	2	Used to adjust the sensitivity of the image density sensor (registration sensor).	Process
	4	Used to set the conditions of the high density process control operation.	Process
	6	Used to execute the high density process control forcibly.	Process
	9	Used to display the result data of the high density process control operation.	Image process (Photoconductor/ Developing/Transfer/Cleaning)
	12	Used to display the operation data of the high density process control and the image density sensor (registration sensor).	Image process (Photoconductor/ Developing)
	13	Used to perform the color image sensor (image registration sensor F) calibration.	
	14	Used to display the output level of the temperature and humidity sensor.	Process (OPC drum, development)/ Fusing/LSU
	15	Used to set the OPC drum idle rotation.	Process
	21	Used to set the halftone process control target.	Process
	22	Used to display the toner patch density level in the halftone process control operation.	Process
	24	Used to display the correction target and the correction level in the halftone process control operation.	Process
	25	Used to set the calculating conditions of the correction value for the halftone process control.	Process
	26	Used to execute the halftone process control compulsory.	Process
	27	Used to clear the correction data of the halftone process control.	Process
	28	Used to set the process control execution conditions.	Process
	29	Used to set the operating conditions of the process control during a job.	Process
	31	Used to adjust the OPC drum phase. (Manual adjustment)	Process
	37	Used to set the development bias correction level in the continuous printing operation.	
	43	Used to display the identification information of the developing unit.	Developing system
	61	Used to adjust the color image density sensor. (The adjustment is made according to the input of SIM44-13 to set the target value of the color sensor gain adjustment.)	
	62	Used to set the process control execution conditions.	Process

Main	Sub	Functions	Section
46	1	Used to adjust the copy density in the copy mode.	
	2	Used to adjust the copy density in the copy mode.	
	4	Used to adjust the density in the image send mode.	
	5	Used to adjust the density in the image send mode.	
	8	Used to adjust the image send mode color balance RGB.	
	9	Used to adjust the scan image density.	
	10	Used to adjust the copy color balance and the gamma (for each color copy mode).	
	16	Used to adjust the monochrome copy density and the gamma (for each monochrome copy mode).	
	19	Used to set the operating conditions for the density scanning (exposure) of monochrome auto copy mode documents.	
	21	Copy color balance adjustment (Manual adjustment)	
	23	Used to set the density correction of copy high density section (High density tone gap supported).	
	24	Copy color balance adjustment (Auto adjustment)	
	25	Used to adjust the copy color balance. (Single color copy mode)	
	26	Used to reset the single color mode color balance set value to the default.	
	27	Used to adjust the gamma/density of copy images, texts, and line image edges.	
	30	Used to adjust the resolution in the sub scanning direction in the copy mode.	
	32	Used to adjust the document background density reproducibility in the monochrome auto copy mode.	
	36	Used to adjust the colors in the 2-color copy mode.	
	37	Used to adjust the reproduction capability of monochrome mode color.	
	38	Used to adjust the black component amount in the color copy mode.	
	39	Used to adjust the sharpness of FAX send images.	
	40	Used to adjust the FAX send image density. (Collective adjustment of all the modes)	
	41	Used to adjust the FAX send image density. (Normal)	
	42	Used to adjust the FAX send image density. (Fine)	
	43	Used to adjust the FAX send image density. (Super Fine)	
	44	Used to adjust the FAX send image density. (Ultra fine)	
	45	Used to adjust the FAX send image density. (600dpi).	
	46	Used to adjust the FAX send image density. (RGB RIP) (26cpm/36cpm/31cpm(A) machine)	
	47	Used to set the compression rate of copy and scan images (JPEG).	
	51	Used to adjust the gamma for the copy mode heavy paper mode and the image process mode.	
	52	Used to set the gamma default for the copy mode heavy paper and the image process mode. (After execution of either SIM46-54 or SIM46-51, the adjustment value is reset to the initial value.)	
	54	Used to perform the engine halftone automatic density adjustment (dither).	
	55	Used to adjust the drop out color in the image send mode (monochrome manual text mode). (26cpm/36cpm/31cpm(A) machine)	
	58	Used to set the copy mode pseudo resolution. (Smoothing process)	
	59	Used to perform the copy mode pseudo resolution image process adjustment.	
	60	Used to adjust the sharpness in the color auto copy mode.	
	61	Used to adjust the area separation recognition level.	
	62	Used to set the operating conditions of the ACS, the area separation, the background image process, and the auto exposure mode.	
	63	Used to adjust the density in the copy low density section.	
	65	Used to set the color correction table.	
	66	Used to adjust the reproduction capability of watermarks in the copy/printer mode. (26cpm/36cpm/31cpm(A) machine)	
	74	Copy color balance adjustment (Auto adjustment)/Printer color balance adjustment (Auto adjustment)	
	90	Used to set the process operation of high-compression PDF images. (26cpm/36cpm/31cpm(A) machine)	
	91	Used to adjust the reproduction capability of black text. (26cpm/36cpm/31cpm(A) machine)	
48	1	Used to adjust the scan image magnification ratio (in the main scanning direction and the sub scanning direction).	
	5	Used to correction the scan image magnification ratio (in the sub scanning direction).	Scanner section
	6	Used to adjust the rotation speed of each motor.	
49	1	Used to perform the firmware update.	
	3	Used to update the operation manual in the HDD.	
	5	Used to perform the watermark update.	

Main	Sub	Functions	Section
50	1	Copy image position, image loss adjustment	
	2	Used to adjust the copy image position and the image loss. (This simulation is a simplified version of SIM 50-1.) (18cpm/20cpm/23cpm/31cpm(G) machine)	
	5	Used to adjust the print lead edge image position. (PRINTER MODE)	
	6	Used to adjust the copy image position and the image loss. (RSPF mode)	RSPF
	7	Used to adjust the copy image position and the image loss (RSPF mode). (This simulation is a simplified version of SIM 50-6.) (18cpm/20cpm/23cpm/31cpm(G) machine)	RSPF
	10	Used to adjust the black print image magnification ratio and the off-center position. (The adjustment is made separately for each paper feed section.)	
	12	Used to perform the scan image off-center position adjustment. (The adjustment is made separately for each scan mode.)	
	20	Image registration adjustment (Main scanning direction)	
	22	Used to adjust the image registration. (Main scan direction, sub scan direction) (Auto adjustment)/OPC drum phase adjustment (Auto adjustment)	
	24	Used to display the detail data of SIM 44-2, 50-20, 21 and 22.	
	27	Used to perform the image loss adjustment of scanned images in the FAX or image send mode.	
	28	Used to automatically adjust the image loss, void area, image off-center, and image magnification ratio.	
51	1	Used to adjust the ON/OFF timing of the secondary transport voltage.	
	2	Used to adjust the contact pressure (deflection amount) on paper by the main unit and the RSPF resist roller. (This adjustment is performed when there is a considerable variation in the print image position on the paper or when paper jams frequently occur.)	
53	6	Used to adjust the detection level of the RSPF document width.	
	7	Used to adjust the RSPF document size width sensor.	
	8	Used to adjust the document lead edge reference and the RSPF mode document scan position.	
55	1	Used to set the specifications of the engine control operations. (SOFT SW)	
	2	Used to set the specifications of the scanner control operation. (SOFT SW)	
	3	Used to set the specifications of the controller operation. (SOFT SW)	
	10	Used to set the special stamp text. (Taiwan only)	
56	1	Used to transport data between HDD - MFP PWB SRAM/EEPROM. (Used to repair the PWB.)	
	2	Used to backup the data in the EEPROM. SD Card, and HDD (including user authentication data and address data) to the USB memory. (Corresponding to the device cloning and the storage backup.)	
	3	Used to backup the document filing data to the USB memory.	
	4	Used to backup the JOB log data to the USB memory.	
	5	Used to import the SIM22-6 data to a USB memory in the TEXT format.	
	11	Used co copy the SD Card data to an option HDD.	MFP PWB/HDD
	12	Used co copy the SD Card data to an option HDD.	MFP PWB/HDD
60	1	Used to check the memory operations (read/write) of the MFP PWB.	
61	1	Used to check the LSU polygon motor rotation and laser detection.	LSU
	3	Used to set the laser power	
	4	Used to print the print image skew adjustment pattern. (LSU unit)	
62	1	Used to format the hard disk/SD Card. (HDD: Excluding the Operation manual and the watermark data) (SD Card: User data)	
	2	Used to check read/write of the hard disk (partial).	
	3	Used to check read/write of the hard disk (all areas).	
	6	Used to perform the self diagnostics of the hard disk.	
	7	Used to print the hard disk self diagnostics error log.	
	8	Used to format the hard disk/SD Card. (HDD: Excluding the Operation Manual, the watermark data, and the system area) (SD Card: User data)	
	10	Used to clear the job completion list data.	
	11	Used to delete the document filing data.	
	12	Used to set Enable/Disable of auto format in a hard disk trouble.	
	13	Used to format the hard disk. (Operation Manual, watermark data only)	
	14	Used to delete the document filing management data.	HDD
	15	Used to convert the setting data for document filing reprint.	MFP
	20	Used to check the operation of the mirroring hard disk. (26cpm/36cpm/31cpm(A) machine)	Mirroring hard disk
63	1	Used to display the shading correction result.	Scanner
	2	Used to perform shading.	
	3	Used to perform scanner (CCD) color balance and gamma auto adjustment.	Scanner
	4	Used to display the SIT chart patch density.	
	5	Used to perform the scanner (CCD) color balance and gamma default setting.	
	6	Used to display the scan level and the density level of the copy color balance adjustment patch.	
	7	Used to register the service target of the copy mode auto color balance adjustment.	
	8	Used to set the default of the service target of the copy mode auto color balance adjustment.	
	11	Used to set the target color balance of the copy mode auto color balance adjustment.	
64	1	Test print. (Self print) (Color mode)	
	2	Test print. (Self print) (Monochrome mode)	
	4	Printer test print. (Self print)	
	5	Printer test print. (Self print) (PCL)	
	6	Printer test print. (Self print) (PS)	
	7	Used to print the adjustment pattern of the test print .(Self print). (The adjustment pattern of SIM46-21 is printed.)	

Main	Sub	Functions	Section
65	1	Used to adjust the touch panel (LCD display section) detection coordinates.	Operation panel section
	2	Used to display the touch panel (LCD display section) detection coordinates.	
	5	Used to check the operation panel key input.	
66	1	Used to display the FAX-related soft SW (2 - 150) on the LCD to allow changing the soft SW while checking with the LCD.	FAX
	2	Used to enter a country code and set the default value for the country code.	FAX
	3	Used to check read/write of the EEPROM and the SDRAM on the MODEM controller and display the result.	FAX
	4	Used to send the selected signals to the line and the main unit speaker. (Send level: max.)	FAX
	5	Used to send the selected signal to the line and the main unit speaker. (Send level: Soft SW setting) (For the kinds of send signals, refer to SIM66-04.)	FAX
	6	Used to print the confidential registration check table (BOX NO., BOX name, passcode. (If there is no confidential registration, no print is made.)	FAX
	7	Used to output all image data saved in the image memory. (Confidential data are also outputted.)	FAX
	8	Used to send the selected sound messages to the line and the speaker. (Send level: Max.)	FAX
	9	Used to send the selected sound message to the line and the speaker. (Send level: Soft SW setting) * For details of sound messages, refer to the sound message table of SIM66-08.	FAX
	10	Used to clear the FAX and image send image data. (The confidential data are also cleared.)	FAX
	11	Used to send the selected signal at 300bps to the line and the speaker. (Send level: Max.)	FAX
	12	Used to send the selected signal at 300bps to the line and the speaker. (Send level: Soft SW setting) * For the kings of send signals at 300bps, refer to SIM66-11, 300bps send signal table.	FAX
	13	Used to register dial numbers for SIM66-14/15/16, Dial test. (Up to 20 digits can be registered.)	FAX
	14	Used to execute the dial pulse (10PPS) send test and to adjust the make time.	FAX
	15	Used to execute the dial pulse (20PPS) send test and to adjust the make time.	FAX
	16	Used to execute the DTFM signal send test and to adjust the send level.	FAX
	17	Used to send the DTMF signal to the line and the speaker. (Send level: Max.)	FAX
	18	Used to send the DTMF signal to the line and the speaker. (Send level: Soft SW setting)	FAX
	21	Used to print the selected items (system error, protocol monitor).	FAX
	22	Used to set the handset sound volume. (This simulation can be executed even though the handset setting is set to NO. When, however, the handset is not installed, the sound volume cannot be checked.) (Japan model only)	FAX
	24	Used to clear the FAST save data.	FAX
	29	Used to initialize the telephone book data (the one-touch registration table, the FTP/Desktop expansion table, the group expansion table, the program registration table, the interface memory box table, the meta data, InboundRouting, and the DocumentAdmin table).	FAX
	30	Used to display the TEL/LIU status change, The display is highlighted by status change.	FAX
	31	Used to set ON/OFF the port for output to TEL/LIU.	FAX
	32	Used to check the fixed data received from the line and to display the result.	FAX
	33	Used to execute detection of various signals with the line connected and to display the detection result. When a signal is detected, the display is highlighted.	FAX
	34	Used to execute the send test and display the time required for sending image data in the test. Used to execute send test and display. (Unit: ms)	FAX
	36	Used to check send and receive data from the MODEM controller to the MFP controller or the data line or the command line individually.	FAX
	39	Used to check and change the destination setting saved in EEPROM of the FAX BOX.	FAX
	42	Used to rewrite the program to power control installed in the FAX BOX.	FAX
	43	Used to write the adjustment value into the power control installed in the FAX BOX.	FAX
	61	Used to display the FAX-related soft SW (151 - 250) on the LCD to allow changing the soft SW while checking with the LCD.	FAX
	62	Used to import the FAX receive data into a USB memory in PDF file type.	FAX
67	17	Printer reset	Printer
	24	Printer color balance adjustment (Auto adjustment)	Printer
	25	Printer color balance adjustment (Manual adjustment)	Printer
	26	Used to set the target color balance of the printer mode auto color balance adjustment.	Printer
	27	Used to set the service target of the printer mode auto color balance adjustment.	Printer
	28	Used to set the default of the service target of the printer mode auto color balance adjustment.	Printer
	31	Used to clear the printer calibration value.	Printer
	33	Used to change the gamma of the printer screen.	Printer
	34	Used to set the density correction in the printer high density section. (Support for the high density section tone gap)	Printer
	36	Used to adjust the density in the low density section.	Printer
	45	Used to adjust the printer image filter and trapping.	Printer
	52	Used to set the default of the gamma of the printer screen.	Printer
	54	Printer color balance adjustment (Automatic adjustment for each dither (The adjustment is disable in a GDI printer.))	Printer

4. Details of simulation

1

1-1

Purpose	Operation test/check
Function (Purpose)	Used to check the operation of the scanner (reading) unit and the control circuit.
Section	Scanner (reading)

Operation/Procedure

1) Select the operation speed with the touch panel key.
2) Press [EXECUTE] key.
   Scanning is once performed at the speed corresponding to the scan resolution (operation speed).

Item/Display		Operation mode	Default value
OC SCAN	300DPI	300DPI (346.0mm/s)	300DPI (346.0mm/s)
	400DPI	400DPI (259.5mm/s)	
	600DPI	600DPI (173.0mm/s)	
	1200DPI	1200DPI (86.5mm/s)	

1-2

Purpose	Operation test/check
Function (Purpose)	Used to check the sensors in the scanner (reading) section and the related circuits.
Section	Scanner (reading)

Operation/Procedure

The operating status of the sensor is displayed.

When "MHPS" is highlighted, the scanner unit is in the home position.

1-5

Purpose	Operation test/check
Function (Purpose)	Used to check the operation of the scanner (reading) unit and the control circuit.
Section	Scanner (reading)

Operation/Procedure

1) Select the operation speed with the touch panel key.
2) Press [EXECUTE] key.
   Scanning is repeated at the speed corresponding to the scan resolution (operation speed).
   When [EXECUTE] key is pressed, the operation is terminated.

Item/Display		Operation mode	Default value
OC SCAN	300DPI	300DPI (346.0mm/s)	300DPI (346.0mm/s)
	400DPI	400DPI (259.5mm/s)	
	600DPI	600DPI (173.0mm/s)	
	1200DPI	1200DPI (86.5mm/s)	

2

2-1

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the automatic document feeder and the control circuit.
Section	RSPF

Operation/Procedure

1) Select the operation mode and the speed with the touch panel key.
2) Press [EXECUTE] key.
   The RSPF repeats paper feed, transport, and paper exit operations at the speed corresponding to the scan resolution (operation speed).
   When [EXECUTE] key is pressed, the operation is terminated.

[RSPF]

Item/Display		Operation mode	Default value
(SINGLE)	300DPI	300DPI (259.5mm/s)	300DPI (259.5mm/s)
	400DPI	400DPI (259.5mm/s)	
	600DPI	600DPI (173.0 mm/s)	
(DOUBLE)	300DPI	300DPI (259.5mm/s)	300DPI (259.5mm/s)
	400DPI	400DPI (259.5mm/s)	
	600DPI	600DPI (173.0 mm/s)	

2-2

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the sensors and the detectors in the automatic document feeder section and the control circuits.
Section	RSPF

Operation/Procedure

The operating conditions of the sensors and detectors are displayed.

The code names of the sensors and the detectors which are active are highlighted.

Display	Content
SPED	Document sensor
SPPD1	Document transport sensor 1
SPLS1	Paper size detector 1
SPLS2	Paper size detector 2
SOCD	RSPF open/close sensor
SPPD2	Document transport sensor 2
SPPD3	Document transport sensor 3
SPPD4	Document transport sensor 4
SCOV	RSPF cover open/close detector
SSET	SPF installation detection
STMPU	SPF stamp UN installation detection
SWD_LEN	SPF document guide plate position (Unit: 0.1mm)
SWD_AD	SPF document detection volume output AD value

Important

SWD_LEN and SWD_AD are not ON/OFF display.

2-3

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the loads in the automatic document feeder and the control circuit.
Section	RSPF

Operation/Procedure

1) Select a target item of the operation check with the touch panel key.
2) Press [EXECUTE] key.
   The selected load performs the operation.
   When [EXECUTE] key is pressed, the operation is terminated.

Display	Content
SPUM_F	RSPF paper feed motor (normal rotation)
SPUM_R	RSPF paper feed motor (reverse rotation)
SPFM_F	RSPF transport motor (normal rotation)
SPFM_R	RSPF transport motor (reverse rotation)
SPRS	Paper exit roller pressure control solenoid (RSPF)
SRRC	Registration roller clutch (RSPF)
STMPS	Stamp solenoid

3

3-2

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the sensors and the detectors in the finisher and the control circuit.
Section	Finisher

Operation/Procedure

The operating conditions of the sensors and detectors are displayed.

The code names of the sensors and the detectors which are active are highlighted.

Inner finisher (MX-FN17)

Display	Content
FABHS	Paper alignment belt HP sensor
FAPHPS_F	Paper alignment plate HP sensor F
FAPHPS_R	Paper alignment plate HP sensor R
FDRPS	Paper exit roller position sensor
FDTLLS	Paper exit tray lower limit sensor
FDTPD	Delivery tray paper detector
FDTULS	Paper exit tray upper limit sensor
FFL	Fan lock signal
FPCHPS	Punch home position sensor
FPD	Punch unit detection (connector)
FPDFS	Punch dust sensor
FPES1	Punch paper edge sensor 1
FPES2	Punch paper edge sensor 2
FPES3	Punch paper edge sensor 3
FPES4	Punch paper edge sensor 4
FPES5	Punch paper edge sensor 5
FPES6	Punch paper edge sensor 6
FPES7	Punch paper edge sensor 7
FPHPS	Punch unit home position sensor
FPLD1	Paper height detector 1
FPLD2	Paper height detector 2
FPMRS	Punch motor rotation sensor
FPMS	Punch mode sensor
FPPD1	Paper entry detector
FPTS	Punch timing sensor
FSED	Staple empty detector
FSHPS	Staple HP sensor
FSLD	Staple lead edge detector
FSSHPS	Stapler shift home position sensor
FSSS	Staple safety sensor
FSSW	Safety switch
FSTPD	Staple tray paper detector
FTPS	Tray position sensor

Saddle stitch finisher (MX-FN10)

FATPD	Paper alignment tray paper detector
FCD	Connection detector
FCD1	Cover detector 1
FCD2	Cover detector 2
FDRHS	Delivery roller home position sensor
FDTPD	Delivery tray paper detector
FFL	Fan lock signal
FGHPS	Gripper home position sensor
FPAPHS_F	Paper alignment plate home position sensor F
FPAPHS_R	Paper alignment plate home position sensor R
FPCHPS	Punch home position sensor
FPD	Punch unit detection (connector)
FPDD	Delivery detector
FPDFS	Punch dust sensor
FPES1	Punch paper edge sensor 1
FPES2	Punch paper edge sensor 2
FPES3	Punch paper edge sensor 3
FPES4	Punch paper edge sensor 4
FPHHS	Paper hold home position sensor
FPHPS	Punch unit home position sensor
FPLD	Paper surface detector
FPMRS	Punch motor rotation sensor
FPMS	Punch mode sensor
FPPD1	Paper transport detector 1
FPPD2	Paper transport detector 2
FPPD3	Paper transport detector 3
FPTS	Punch timing sensor
FSAPHS	Saddle alignment plate home position sensor
FSATPD	Saddle paper alignment tray paper detector
FSED	Staple empty detector
FSHS	Staple home position sensor
FSLS	Staple lead edge sensor
FSMRS	Saddle motor rotation sensor
FSPGHS	Saddle paper guide home position sensor
FSPHS	Saddle plate home position sensor
FSRHS	Saddle roller home position sensor
FSSCS	Saddle staple cover sensor
FSSES	Saddle staple sensor
FSSHPS	Stapler shift home position sensor
FSSHS	Saddle staple home position sensor
FSSSHS	Saddle stapler shift home position sensor
FSSSW1	Staple safety switch
FSSSW2	Stapler safety switch 2
FSSW1	Safety switch 1
FSTPD	Saddle exit tray paper detector
FTLLD	Tray lower limit detector
FTLMRS	Tray lift motor rotation sensor
FTPS	Tray position sensor
FTULD	Tray upper limit detector
PDOS	Paper pass cover Open/Close sensor
PDPPD1	Paper pass paper transport detector 1
PDPPD2	Paper pass paper transport detector 2

3-3

Purpose	Operation test/check
Function (Purpose)	Used to check the operation of the load in the finisher and the control circuit.
Section	Finisher

Operation/Procedure

1) Select the item to be operation checked with the touch panel key.
2) Press [EXECUTE] key.
   The selected load performs the operation.
   When [EXECUTE] key is pressed, the operation is terminated.

Inner finisher (MX-FN17)

Display	Content
FCF	Cooling fan
FDRLM	Paper exit roller lift motor
FPAM_F	Paper alignment motor F
FPAM_R	Paper alignment motor R
FPAS	Paper alignment solenoid
FPDM	Paper exit motor
FPGS	Paper gate solenoid
FPLDS	Paper height detector solenoid
FPM	Punch motor
FPS	Paddle solenoid
FPSM	Punch shift motor
FPTM	Paper transport motor
FSM	Staple motor
FSSM	Stapler shift motor
FTLM	Tray lift motor

Saddle stitch finisher (MX-FN10)

Display	Content
FDRLM	Paper exit roller lift motor
FGM	Gripper motor
FPAM_F	Paper alignment motor F
FPAM_R	Paper alignment motor R
FPHS1	Paper holding solenoid 1
FPHS2	Paper holding solenoid 2
FPM	Punch motor
FPSM	Punch shift motor
FPTM1	Paper transport motor 1
FPTM2	Paper transport motor 2
FSDM	Saddle motor
FSDSM	Saddle staple motor
FSM	Staple motor
FSPAM	Saddle paper alignment motor
FSPM	Saddle positioning motor
FSPTM	Saddle paper transport motor
FSSM	Stapler shift motor
FTLM	Tray lift motor
PDCF	Paper pass cooling fan
PDPGS	Paper pass paper gate solenoid
PDPTM	Paper pass paper transport motor

3-10

Purpose	Adjustment
Function (Purpose)	Used to adjust the finisher.
Section	Finisher

Operation/Procedure

1) Select an adjustment target item with scroll key on the touch panel.
2) Enter the set value with 10-key.
3) Press [OK] key. (The set value is saved.)

Inner finisher (MX-FN17)

Item/Display		Content	Setting range	Default value	Purpose (Case where the adjustment is required)	Change when the adjustment value is increased or decreased		Change when the adjustment value is changed by 1
A	FRONT ADJUST	Alignment position adjustment (F side alignment plate stop position) (Paper alignment adjustment)	2 - 18	10	This adjustment is used to adjust the paper alignment width when the paper alignment is improper. Alignment is determined by the combination of the both adjustment values of FRONT ADJUST and REAR ADJUST.	F side paper alignment stop position (F/R direction)	When the adjustment value is increased, the alignment plate stop position is shifted to the R side. When the adjustment value is decreased, the alignment plate stop position is shifted to the F side.	0.3665mm
B	REAR ADJUST	Alignment position adjustment (R side alignment plate stop position) (Paper alignment adjustment)	2 - 18	10	When changing the adjustment values of FRONT ADJUST and REAR ADJUST from the default values, be sure to change them by the same variation.	R side paper alignment stop position (F/R direction)	When the adjustment value is increased, the alignment plate stop position is shifted to the F side. When the adjustment value is decreased, the alignment plate stop position is shifted to the R side.	0.3665mm
C	STAPLE REAR	Stapling position adjustment (one position at the rear)	68 - 132	100	When the staple position on the R side is shifted, perform the adjustment.	Staple position (Stapler stop position) (F/R direction)	When the adjustment value is increased, the staple position is shifted to the rear side. When the adjustment value is decreased, the staple position is shifted to the front side.	0.155mm
D	STAPLE FRONT	Stapling position adjustment (one position in front)	68 - 132	100	When the staple position on the F side is shifted, perform the adjustment.	Staple position (Stapler stop position) (F/R direction)	When the adjustment value is increased, the staple position is shifted to the rear side. When the adjustment value is decreased, the staple position is shifted to the front side.	0.155mm

Item/Display		Content	Setting range	Default value	Purpose (Case where the adjustment is required)	Change when the adjustment value is increased or decreased		Change when the adjustment value is changed by 1
E	STAPLE BOTH	Stapling position adjustment (center position of two positions binding)	68 - 132	100	When the staple off-center is shifted, perform the adjustment.	Staple position (Stapler stop position) (F/R direction)	When the adjustment value is increased, the staple position is shifted to the rear side. When the adjustment value is decreased, the staple position is shifted to the front side.	0.155mm
F	STAPLE PITCH	Stapling position adjustment (staple pitch of two positions binding)	68 - 132	100	When it is required to change the staple interval, perform the adjustment.	Staple position (Stapler stop position) (F/R direction)	When the adjustment value is increased, the staple interval is increased. When the adjustment value is decreased, the staple interval is decreased.	0.155mm
G	PUNCH CENTER	Punch center positioning sensor	37 - 63	50	When the punch off-center is shifted, perform the adjustment.	Punch position (F/R direction)	When the adjustment value is decreased, the punch position is shifted to the front side. When the adjustment value is increased, the punch position is shifted to the rear side.	0.1441mm
H	PUNCH HOLE	Punch hole adjustment (paper transport direction)	42 - 58	50	When the punch hole position is shifted in the transport direction, perform the adjustment.	Punch position (Paper transport direction)	When the adjustment value is increased, the punch position is shifted to the paper lead edge side. When the adjustment value is decreased, the punch position is shifted to the paper rear edge side.	0.2584mm

Saddle stitch finisher (MX-FN10)

Item/Display		Content	Setting range	Default value	Purpose (Case where the adjustment is required)	Change when the adjustment value is increased or decreased		Change when the adjustment value is changed by 1
A	SADDLE POSITION	Saddle stitch position adjustment	25 - 75	50	The adjustment is executed when the saddle staple position is shifted.	Saddle paper lead edge striking plate stop position (Up-down direction)	When the adjustment value is increased, the stapling position is shifted to the lead edge of transported paper. When the adjustment value is decreased, the stapling position is shifted to the rear edge of transported paper.	0.2mm
B	FOLDING POSITION	Saddle folding position adjustment	25 - 75	50	The adjustment is executed when the saddle folding position is shifted.	Saddle paper lead edge striking plate stop position (Up-down direction)	When the adjustment value is increased, the folding position is shifted to the lead edge of transported paper. When the adjustment value is decreased, the folding position is shifted to the rear edge of transported paper.	0.2mm
C	FRONT ADJUST	Alignment position adjustment (front)	35 - 65	50	When the paper alignment capability in the stacker section is improper, the paper alignment width is adjusted.	F side paper alignment plate stop position (F/R direction)	When the adjustment value is increased, the alignment position is shifted to the center. When the adjustment value is decreased, the alignment position is shifted to the outside.	0.2mm
D	REAR ADJUST	Alignment position adjustment (Rear)	35 - 65	50		R side paper alignment plate stop position (F/R direction)	When the adjustment value is increased, the alignment position is shifted to the center. When the adjustment value is decreased, the alignment position is shifted to the outside.	0.2mm
E	STAPLE REAR	Stapling position adjustment (Rear, one position)	25 - 75	50	When the stapling position on the R side is shifted, the adjustment is executed.	Stapling position (stapler stop position) (F/R direction)	When the adjustment value is increased, the distance between the stapling position and the paper edge becomes longer. When the adjustment value is decreased, the distance between the stapling position and the paper edge becomes shorter.	0.2mm

Item/Display		Content	Setting range	Default value	Purpose (Case where the adjustment is required)	Change when the adjustment value is increased or decreased		Change when the adjustment value is changed by 1
F	STAPLE REAR R	Stapling position adjustment (Rear, one position /R series)	45 - 75	50	When the stapling position on the R side is shifted with R series paper, the adjustment is executed.	Stapling position (stapler stop position) (F/R direction)	When the adjustment value is increased, the distance between the stapling position and the paper edge becomes longer. When the adjustment value is decreased, the distance between the stapling position and the paper edge becomes shorter.	0.2mm
G	STAPLE FRONT	Stapling position adjustment (one position in front)	25 - 75	50	When the stapling position on the F side is shifted, the adjustment is executed.	Stapling position (stapler stop position) (F/R direction)	When the adjustment value is decreased, the distance between the stapling position and the paper edge becomes shorter. When the adjustment value is increased, the distance between the stapling position and the paper edge becomes longer.	0.2mm
H	STAPLE FRONT R	Stapling position adjustment (Front, one position / R series)	25 - 55	50	When the stapling position on the F side is shifted with R series paper, the adjustment is executed.	Stapling position (stapler stop position) (F/R direction)	When the adjustment value is decreased, the distance between the stapling position and the paper edge becomes shorter. When the adjustment value is increased, the distance between the stapling position and the paper edge becomes longer.	0.2mm
I	STAPLE BOTH	Stapling position adjustment (Two positions, center)	45 - 55	50	When the staple off-center is shifted, the adjustment is executed.	Stapling position (stapler stop position) (F/R direction)	When the adjustment value is increased, the stapling position is shifted to the front. When the adjustment value is decreased, the stapling position is shifted to the rear.	0.2mm
J	STAPLE PITCH	Stapling position adjustment (Two positions, pitch)	35 - 62	50	When the stapling interval is to be changed, the adjustment is executed.	Stapling position (stapler stop position) (F/R direction)	When the adjustment value is increased, the pitch of two points is widened. When the adjustment value is decreased, the pitch of two points is narrowed.	0.2mm
K	PUNCH CENTER	Punch center adjustment	35 - 65	50	When the punch off-center is shifted, the adjustment is executed.	Punching position (F/R direction)	When the adjustment value is increased, the hole position is shifted to the front. When the adjustment value is decreased, the hole position is shifted to the rear.	0.2mm
L	PUNCH HOLE	Punch hole position adjustment	30 - 60	50	When the punch hole position is shifted in the transport direction, the adjustment is executed.	Punch position (paper transport direction)	When the adjustment value is increased, the punch hole position is shifted to the rear edge of paper. When the adjustment value is decreased, the punch hole position is shifted to the lead edge of paper.	0.2mm
M	SADDLE_ ADJUST_POS	Saddle alignment position adjustment	35 - 65	50	When the paper alignment capability in the saddle section is improper, the paper alignment width is adjusted.	Saddle paper alignment plate stop position (F/R direction)	When the adjustment value is increased, the alignment plate position is shifted to the center. When the adjustment value is decreased, the alignment plate position is shifted to the outside.	0.2mm
N	GRIPPER_ POS	Gripper exit position adjustment	35 - 65	50	When the gripper discharge position is shifted, the adjustment is executed. (When a JAM or trouble occurs, the adjustment is executed.)	Gripper discharge position (Gripper stop position) (F/R direction)	When the adjustment value is increased, the gripper discharge position is shifted to the front. When the adjustment value is decreased, the gripper discharge position is shifted to the rear.	0.2mm

4

4-2

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the sensors and detectors in the desk/large capacity tray (LCC), and the control circuit of those.
Section	Desk/Large capacity tray (LCC)

Operation/Procedure

The operating conditions of the sensors and detectors are displayed.

The code names of the sensors and the detectors which are active are highlighted.

Desk

Display	Content
D1MDC	Desk 1 installation detection connector
D1PPD	Desk 1 paper transport detector
D1ULD	Desk 1 upper limit detector
D1PED	Desk 1 paper empty detector
D1PQD	Desk 1 remaining paper quantity detector
D1PRED1	Desk 1 paper rear edge detector 1
D1PRED2	Desk 1 paper rear edge detector 2
D1PRED3	Desk 1 paper rear edge detector 3
D1PRED4	Desk 1 paper rear edge detector 4
D2MDC	Desk 2 installation detection connector
D2PPD	Desk 2 paper transport detector
D2ULD	Desk 2 upper limit detector
D2PED	Desk 2 paper empty detector
D2PQD	Desk 2 remaining paper quantity detector
D2PRED1	Desk 2 paper rear edge detector 1
D2PRED2	Desk 2 paper rear edge detector 2
D2PRED3	Desk 2 paper rear edge detector 3
D2PRED4	Desk 2 paper rear edge detector 4

LCC

Display	Content
LPFD	LCC transport detector
LUD	LCC tray upper limit detector
LDD	LCC tray lower limit detector
LPED	LCC tray paper empty detector
LCLD	LCC tray open/close detector
LDSW	LCC upper open/close detection switch
LRE	LCC lift motor encoder sensor
L24VM	LCC24V power monitor
LLSW	LCC upper limit switch
LCCD	LCC main unit connection detector

4-3

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the loads in the desk/large capacity tray (LCC), and the control circuit of those.
Section	Desk/Large capacity tray (LCC)

Operation/Procedure

1) Select the load item that is required to operation check with the touch panel key.
2) Press [EXECUTE] key.

   The selected load performs the operation.

   When [EXECUTE] key is pressed, the operation is terminated.

Desk

Display	Content
D1LM	Tray 1 lift-up motor
D1PFC	Tray 1 paper feed clutch
D2LM	Tray 2 lift-up motor
D2PFC	Tray 2 paper feed clutch
DPFM	Desk transport motor
DPTRC	Desk paper transport clutch

LCC

Display	Content
LPFM	LCC transport motor
LLM	LCC lift motor
LPFC	LCC paper feed clutch
LPFS	LCC paper feed solenoid
LTRC	LCC transport clutch

4-5

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the paper feed desk paper transport clutch (DTRC) and the LCC paper transport clutch (LTRC).
Section	Desk/Large capacity tray (LCC)

Operation/Procedure

Check the ON operation

Press the button of the code name for checking the ON operation.

Checking is started. When the operation is normal, the button on the display is highlighted. When it is abnormal, the button is not highlighted.

Check the OFF operation

Press the highlighted button which is ON.

When the operation is normal, the highlighted button on the display returns to the normal display. When it is abnormal, the highlighted display is maintained.

Button	Content
DTRC	Desk transport clutch
LTRC	LCC transport clutch

5

5-1

Purpose	Operation test/check
Function (Purpose)	Used to check the operation of the display, LCD in the operation panel, and control circuit.
Section	Operation panel

Operation/Procedure

The LCD is changed as shown below.

The contrast changes every 2sec from the current level to MAX → MIN → the current level. During this period, each LED is lighted.

The LCD display contrast change and the LED lighting status are checked.

5-2

Purpose	Operation test/check
Function (Purpose)	Used to check the operation of the heater lamp and the control circuit.
Section	Fusing

Operation/Procedure

1) Select the item to be operation checked with the touch panel key.
2) Press [EXECUTE] key.
   The selected heater lamp operates ON/OFF.
   When [EXECUTE] key is pressed, the operation is terminated.

Heater lamp operation check method:
Remove the front cabinet upper and the paper exit tray, and the lighting status of each heater lamp can be checked through the clearance between the fusing pressure release drive gear and the frame fusing section.

HL_LM	Heater lamp (B) (Back surface)
HL_UM	Main heater lamp (F) (Front surface)
HL_US	Sub heater lamp (F) (Front surface)

5-3

Purpose	Operation test/check
Function (Purpose)	Used to check the operation of the scanner lamp and the control circuit.
Section	Scanner (reading)

Operation/Procedure

1) Select the item to be operation checked with the touch panel key.
2) Press [EXECUTE] key.
   The scanner lamp lights up for 10 sec.
   When [EXECUTE] key is pressed, the operation is terminated.

5-4

Purpose	Operation test/check
Function (Purpose)	Used to check the operation of the discharge lamp and the control circuit.
Section	Process

Operation/Procedure

1) Select a target of the operation check with the touch panel key. When [ALL] key is pressed, all the items are selected.
2) Press [EXECUTE] key.
   The selected discharge lamp is lighted for 30 sec.
   When [EXECUTE] key is pressed, the operation is terminated.

DL_K	Discharge lamp K
DL_C	Discharge lamp C
DL_M	Discharge lamp M
DL_Y	Discharge lamp Y

6

6-1

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the load in the paper transport system (clutches and solenoids) and the control circuits.
Section	Paper transport/Paper exit section

Operation/Procedure

1) Select the item to be operation checked with the touch panel key.
2) Press [EXECUTE] key.
   The selected load performs the operation.
   When [EXECUTE] key is pressed, the operation is terminated.

Load operation check method:
The load operation is checked by the operation sound. However, there are some loads which cannot be checked with the operation sound.

Section	Item/Display	Content
Transport/ process	ADUC1	ADU transport clutch 1
	PFM	Transport motor
	RRM	Registration motor
	POMF (*1)	Paper exit motor (normal rotation)
	POMR (*1)	Paper exit motor (reverse rotation)
	FUM	Fusing motor
	CPFM	Paper feed motor
	OSM	Offset motor
	CPFC1	Tray vertical transport clutch 1
	CPFC2	Tray vertical transport clutch 2
	TRC_DSK	Desk clutch
	TRC_LCC (*2)	LCC clutch
	TRC_FIN	Finisher clutch
	HPFC	Transport roller clutch
	PFC	Vertical transport clutch
	RRC	Registration roller clutch
Paper feed	CLUM1	Paper tray lift motor (Paper feed tray 1)
	CPUC1	Paper feed clutch (Paper feed tray 1)
	CLUM2	Paper tray lift motor (Paper feed tray 2)
	CPUC2	Paper feed clutch (Paper feed tray 2)
	CPUS1	Paper feed pickup solenoid (Paper feed tray 1) (Not used)
	MPFS	Paper feed solenoid (Manual paper feed)

*1: If "Normal rotation" and "Reverse rotation" of a same load are displayed as different items, when the both are selected at the same time, "Normal rotation" is performed. In addition, a change in the rotating direction is accepted only when the operation is stopped.

*2: Displayed but not installed in some models.

6-2

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of each fan motor and its control circuit.
Section	Others

Operation/Procedure

1) Select the item to be operation checked with the touch panel key.
2) Press [EXECUTE] key.
   The selected load performs the operation.
   When [EXECUTE] key is pressed, the operation is terminated.
   Press [ALL] key to select all the fans collectively.

Load operation check method:
The load operation is checked by the operation sound. However, there are some loads which cannot be checked with the operation sound.

18/20/23/26/31cpm machine

Display	Content
PROFM2	Process fan 2
POFM	Paper exit cooling fan (Drives POFM1 and POFM2 at the same time.)
FUFM	Fusing cooling fan
PROFM1	Process fan 1
PSFM	Power cooling fan

36cpm machine

Display	Content
POFM	Paper exit cooling fan motor (Drives POFM1 and POFM2 at the same time.)
PSFM	Power cooling fan motor
PROFM1	Process fan motor 1
PROFM2	Process fan motor 2
FUFM	Fusing fan motor
LSUFM	LSU cooling fan motor

6-3

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the transport unit and the control circuit.
Section	Process (Transport)

Operation/Procedure

1) Select the operation mode with the mode select button.

Mode select button	Content
TC1	Primary transfer (normal rotation)
TC1_R	Primary transfer (reverse rotation)
TC2	Secondary transfer

2) When [EXECUTE] key is pressed, the operation of the mode selected in 1) is performed.

Mode select button	Mode display	Content	NOTE
TC1	BLACK	Monochrome mode position	Black mode position → Color mode position → Black mode position → Drum separation position → (Black mode position) (Repeated in this sequence.)
	COLOR	Color mode position	
	FREE	Non-transport position	
TC1_R	BLACK	Monochrome mode position	Black mode position → Drum separation position → Color mode position → (Black mode position) (Repeated in this sequence.)
	FREE	Non-transport position	
	COLOR	Color mode position	
TC2	PRINT	Print position	Print position - Transfer position - Non-transfer position (Repeated in this sequence)
	FREE	Non-transport position	

6-6

Purpose	Operation test/check
Function (Purpose)	Used to perform fusing pressure release and applying, and to check the operations of the control circuits.
Section	Fusing

Operation/Procedure

1) Press [FUSER] key to highlight it.
2) Press [EXECUTE] key, and fusing pressure applying and fusing pressure release are repeated.

During this period, the status of the fusing roller pressure is displayed.

PRINT	Fusing pressure applying	Fusing pressure applying → Fusing pressure release → (Fusing pressure applying) The operation is repeated.
FREE	Fusing pressure release	

6-90

Purpose	Setting
Function (Purpose)	Used to reset the machine to the factory setting. (The scanner is set to the lock enable position)
Section	Scanner

Operation/Procedure

1) Press [EXECUTE] key.
   The scanner is shifted to the lock enable position and stopped.

7

7-1

Purpose	Setting
Function (Purpose)	Used to set the operating conditions of aging.
Section	Others

Operation/Procedure

1) Select an item to be set with the touch panel key.
2) Press [EXECUTE] key.
   The machine is rebooted in the aging mode.

The aging operation condition set by this mode is maintained hereafter unless the power is turned off or the setting is changed.

AGING	Aging operation setup
INTERVAL	Intermittent operation setting
MISFEED DISABLE	JAM detection ignoring setting
FUSING DISABLE	Fusing unit ignoring setting
WARMUP DISABLE	Warming up ignoring setting
DV CHECK DISABLE	Developing unit ignoring setting
SHADING DISABLE	Shading correction operation omitting setting
CCD GAIN FREE	CCD gain adjustment omitting setting

7-6

Purpose	Setting
Function (Purpose)	Used to set the operating intermittent aging cycle.
Section	

Operation/Procedure

1) Enter the intermittent aging operation cycle (unit: sec) with 10-key.
2) Press [OK] key.

   The time entered in procedure 1) is set.

   * The interval time that can be set is 1 to 900 (sec).

The aging operation condition set by this mode is maintained hereafter unless the power is turned off or the setting is changed.

7-8

Purpose	Operation display
Function (Purpose)	Used to display the warm-up time.
Section	

Operation/Procedure

Press [EXECUTE] key.

Counting of the warm-up time is started and the time required for warm-up is displayed

* Interruption of counting by pressing [EXECUTE] key is inhibited.

7-9

Purpose	Operation test/check
Function (Purpose)	Color setting in the color copy test mode (Used to check the copy operation and the image quality for each color).
Section	

Operation/Procedure

1) Select the copy color with the touch panel key.
   (Two or more colors can be selected.)

   The key of the selected color is highlighted.
2) Press [EXECUTE] key.

   Copying is performed with the selected color.

When [CLOSE] key is pressed, the display goes into the copy operation menu in the simulation mode.

K	Setup/cancel of black
C	Setup/cancel of cyan
M	Setup/cancel of magenta
Y	Setup/cancel of yellow

7-12

Purpose	Operation test/check
Function (Purpose)	The document reading number of sheets setting (for aging operation)
Section	RSPF

Operation/Procedure

1) Set document reading quantity with 10-key.
   (Setting range:0 - 255)
2) Press [OK] key. The set value is saved.

The aging operation condition set by this mode is maintained hereafter unless the power is turned off or the setting is changed.

8

8-1

Purpose	Operation test/check/adjustment
Function (Purpose)	Used to check and adjust the operations of the developing voltage in each print mode and the control circuit. * When the middle speed is adjusted, the low speed are also adjusted simultaneously.
Section	Process (Developing)

Operation/Procedure

1) Select a speed with [MIDDLE] and [LOW] keys on the touch panel.
2) Select a target item to be adjusted with scroll keys.
3) Enter the setting value with 10-key. (The value specified on the label of the high voltage PWB must be entered.)
   * When the △ ▽ key is pressed, the setting value of each item can be changed with 1up (1down) collectively.
4) Press [EXECUTE] key.

   The set value is saved and the voltage entered with step 3) is output for 30 sec.

   When [EXECUTE] key is pressed, the output is terminated.

Item/Display (Mode)			Content		Adjustment range	Actual voltage
MIDDLE	A	MIDDLE SPEED DVB_K	Developing bias voltage (Middle speed mode)	K	0 - 600	–450V ±5V
	B	MIDDLE SPEED DVB_C	Developing bias voltage (Middle speed mode)	C	0 - 600	–450V ±5V
	C	MIDDLE SPEED DVB_M	Developing bias voltage (Middle speed mode)	M	0 - 600	–450V ±5V
	D	MIDDLE SPEED DVB_Y	Developing bias voltage (Middle speed mode)	Y	0 - 600	–450V ±5V
LOW	A	LOW SPEED DVB_K	Developing bias voltage (Low speed mode)	K	0 - 600	–450V ±5V
	B	LOW SPEED DVB_C	Developing bias voltage (Low speed mode)	C	0 - 600	–430V ±5V
	C	LOW SPEED DVB_M	Developing bias voltage (Low speed mode)	M	0 - 600	–430V ±5V
	D	LOW SPEED DVB_Y	Developing bias voltage (Low speed mode)	Y	0 - 600	–430V ±5V

8-2

Purpose	Operation test/check/adjustment
Function (Purpose)	Used to check and adjust the operation of the main charger grid voltage in each printer mode and the control circuit. * When the middle speed is adjusted, the low speed are also adjusted simultaneously.
Section	Process (Charging)

Operation/Procedure

1) Select a speed with [MIDDLE] and [LOW] keys on the touch panel.
2) Select a target item to be adjusted with scroll keys.
3) Enter the adjustment value with 10-key. (The value specified on the label of the high voltage PWB must be entered.)
   * When the △ ▽ key is pressed, the setting value of each item can be changed with 1up (1down) collectively.
4) Press [EXECUTE] key.
   The set value is saved and the voltage entered with step 3) is output for 30 sec.
   When [EXECUTE] key is pressed, the output is terminated.

Item/Display (Mode)			Content		Adjustment range	Actual voltage		
						18cpm/ 20cpm/ 23cpm machine	26cpm/ 31cpm machine	36cpm machine
MIDDLE	A	MIDDLE SPEED GB_K	Main charger grid voltage (Middle speed mode)	K	150 - 850	–615V±5V	–620V±5V	–625V±5V
	B	MIDDLE SPEED GB_C	Main charger grid voltage (Middle speed mode)	C	150 - 850	–615V±5V	–620V±5V	–625V±5V
	C	MIDDLE SPEED GB_M	Main charger grid voltage (Middle speed mode)	M	150 - 850	–615V±5V	–620V±5V	–625V±5V
	D	MIDDLE SPEED GB_Y	Main charger grid voltage (Middle speed mode)	Y	150 - 850	–615V±5V	–620V±5V	–625V±5V
LOW	A	LOW SPEED GB_K	Main charger grid voltage (Low speed mode)	K	150 - 850	–610V±5V	–610V±5V	–610V±5V
	B	LOW SPEED GB_C	Main charger grid voltage (Low speed mode)	C	150 - 850	–590V±5V	–590V±5V	–590V±5V
	C	LOW SPEED GB_M	Main charger grid voltage (Low speed mode)	M	150 - 850	–590V±5V	–590V±5V	–590V±5V
	D	LOW SPEED GB_Y	Main charger grid voltage (Low speed mode)	Y	150 - 850	–590V±5V	–590V±5V	–590V±5V

8-6

Purpose	Operation test/check/adjustment
Function (Purpose)	Used to check and adjust the operation of the transport voltage and the control circuit.
Section	Process (Transport)

Operation/Procedure

1) Select a target item to be adjusted with scroll keys.
2) Enter the set value with 10-key.
   Enter the default value specified on the following list.
3) Press [EXECUTE] key.
   The set value is saved and the voltage corresponding to the set value is output for 30 sec.
   When [EXECUTE] key is pressed, the output is terminated.

Item/Display		Content				Setting range	18cpm/20cpm/ 23cpm machine		26cpm/31cpm machine		36cpm machine	
							Default value	Actual output value	Default value	Actual output value	Default value	Actual output value
A	TC1 LOW SPEED CL K	Primary transfer bias adjustment value	Color	K	Low speed	51 - 255	80	6μA	80	6μA	80	6μA
B	TC1 MIDDLE SPEED CL K				Middle speed	51 - 255	95	8μA	109	10μA	117	11μA
C	TC1 LOW SPEED CL C			C	Low speed	51 - 255	80	6μA	80	6μA	80	6μA
D	TC1 MIDDLE SPEED CL C				Middle speed	51 - 255	95	8μA	109	10μA	117	11μA
E	TC1 LOW SPEED CL M			M	Low speed	51 - 255	80	6μA	80	6μA	80	6μA
F	TC1 MIDDLE SPEED CL M				Middle speed	51 - 255	95	8μA	109	10μA	117	11μA
G	TC1 LOW SPEED CL Y			Y	Low speed	51 - 255	80	6μA	80	6μA	80	6μA
H	TC1 MIDDLE SPEED CL Y				Middle speed	51 - 255	95	8μA	109	10μA	117	11μA
I	TC1 LOW SPEED BW K		Black/White	K	Low speed	51 - 255	80	6μA	80	6μA	80	6μA
J	TC1 MIDDLE SPEED BW K				Middle speed	51 - 255	95	8μA	109	10μA	117	11μA
K	TC2 PLAIN CL SPX	Secondary transfer bias adjustment value	Color	Standard paper	Front surface	51 - 255	96	–35μA	103	–40μA	110	–45μA
L	TC2 PLAIN CL DPX				Back surface	51 - 255	76	–20μA	90	–30μA	96	–35μA
M	TC2 PLAIN BW SPX		Black/White		Front surface	51 - 255	96	–35μA	103	–40μA	110	–45μA
N	TC2 PLAIN BW DPX				Back surface	51 - 255	76	–20μA	90	–30μA	96	–35μA
O	TC2 HEAVY1 CL SPX		Color	Heavy paper 1	Front surface	51 - 255	83	–25μA	83	–25μA	83	–25μA
P	TC2 HEAVY1 CL DPX				Back surface	51 - 255	76	–20μA	76	–20μA	76	–20μA
Q	TC2 HEAVY1 BW SPX		Black/White		Front surface	51 - 255	69	–15μA	69	–15μA	69	–15μA
R	TC2 HEAVY1 BW DPX				Back surface	51 - 255	69	–15μA	69	–15μA	69	–15μA
S	TC2 HEAVY2 CL		Color	Heavy paper 2		51 - 255	83	–25μA	83	–25μA	83	–25μA
T	TC2 HEAVY2 BW		Black/White			51 - 255	69	–15μA	69	–15μA	69	–15μA
U	TC2 OHP CL		Color	OHP		51 - 255	69	–15μA	69	–15μA	69	–15μA
V	TC2 OHP BW		Black/White			51 - 255	69	–15μA	69	–15μA	69	–15μA
W	TC2 ENVELOPE CL		Color	Envelope		51 - 255	69	–15μA	69	–15μA	69	–15μA
X	TC2 ENVELOPE BW		Black/White			51 - 255	69	–15μA	69	–15μA	69	–15μA
Y	TC2 THIN CL		Color	Thin paper		51 - 255	96	–35μA	103	–40μA	110	–45μA
Z	TC2 THIN BW		Black/White			51 - 255	96	–35μA	103	–40μA	110	–45μA
AA	TC2 GLOSSY CL		Color	Gloss paper		51 - 255	83	–25μA	83	–25μA	83	–25μA
AB	TC2 GLOSSY BW		Black/White			51 - 255	69	–15μA	69	–15μA	69	–15μA
AC	TC2 CLEANING	Secondary transfer cleaning bias adjustment value	Cleaning process (negative pole)			51 - 255	59	–8μA	59	–8μA	59	–8μA
AD	TC2 CLEAN LOW SPD		Low speed print mode			0 - 255	26	0V	26	0V	26	0V
AE	TC2 CLEAN MIDDLE SPD		Middle speed print mode			0 - 255	26	0V	26	0V	26	0V
AF	TC2 CLEAN CLEANING		Cleaning bias (positive pole)			0 - 255	102	500V	102	500V	102	500V
AG	PTC LOW SPEED CL	PTC current adjustment value	Color	Low speed		51 - 255	73	–200μA	73	–200μA	73	–200μA
AH	PTC MIDDLE SPEED CL			Middle speed		51 - 255	73	–200μA	73	–200μA	73	–200μA
AI	PTC LOW SPEED BW		Black/White	Low speed		51 - 255	73	–200μA	73	–200μA	73	–200μA
AJ	PTC MIDDLE SPEED BW			Middle speed		51 - 255	73	–200μA	73	–200μA	73	–200μA
AK	CASE VOLT LOW CL	PTC voltage adjustment value	Color	Low speed		0 - 255	0	0V	0	0V	0	0V
AL	CASE VOLT MID CL			Middle speed		0 - 255	0	0V	0	0V	0	0V
AM	CASE VOLT LOW BW		Black/White	Low speed		0 - 255	0	0V	0	0V	0	0V
AN	CASE VOLT MID BW			Middle speed		0 - 255	0	0V	0	0V	0	0V

9

9-2

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the sensors and detectors in the paper reverse section (duplex section) and its control circuit.
Section	Duplex

Operation/Procedure

The operating conditions of the sensors and detectors are displayed.

The code names of the sensors and the detectors which are active are highlighted.

APPD1	ADU paper transport detector 1
APPD2	ADU paper transport detector 2
DSW_ADU	ADU paper guide open/close detector

9-3

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the load in the paper reverse section (duplex section) and its control circuit.
Section	Duplex

Operation/Procedure

1) Select the item to be operation checked with the touch panel key.
2) Press [EXECUTE] key.
   The selected load performs the operation.
   When [EXECUTE] key is pressed, the operation is terminated.

18cpm/20cpm/23cpm/26cpm/31cpm machine

Display	Content
ADUM	ADU motor
ADUC1	ADU transport clutch 1 *1

*1: Displayed, but not installed in some models.

36cpm machine

Display	Content
ADUC1	ADU transport clutch 1 (*)
ADUM	ADU motor
ADUGS	ADU gate solenoid

*: Not used, but the button is displayed.

10

10-1

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the toner supply mechanism (toner motor) and the related circuit.
Section	Process (Developing)

Operation/Procedure

1) Select a target of the operation check with the touch panel key. When [ALL] key is pressed, all the items are selected.
2) Press [EXECUTE] key.
   The selected load operation is performed for 10 sec.
   When [EXECUTE] key is pressed, the operation is terminated.

Important

This simulation must be executed without installing the toner cartridges.

If this simulation is executed with the toner cartridges installed, toner will be forcibly supplied to the developing unit, resulting in overtoner.

If this simulation is erroneously executed with the toner cartridges installed, overtoner state may be deleted by making a few black background copy in the single color copy mode of the target color.

TNM_K	Toner motor K
TNM_C	Toner motor C
TNM_M	Toner motor M
TNM_Y	Toner motor Y

13

13--

Purpose	Cancel (Trouble etc.)
Function (Purpose)	Used to cancel the self-diag "U1" trouble.
Section	

Operation/Procedure

1) Press [EXECUTE] key.
2) Press [YES] key to execute cancellation of the trouble.

14

14--

Purpose	Cancel (Trouble etc.)
Function (Purpose)	Used to cancel the self-diag H3, H4, H5 troubles.
Section	

Operation/Procedure

1) Press [EXECUTE] key.
2) Press [YES] key to execute cancellation of the trouble.

15

15--

Purpose	Clear/Cancel (Trouble etc.)
Function (Purpose)	Used to cancel the self-diag "U6" trouble.
Section	LCC

Operation/Procedure

1) Press [EXECUTE] key.
2) Press [YES] key to execute cancellation of the trouble.

16

16--

Purpose	Clear/Cancel (Trouble etc.)
Function (Purpose)	Used to cancel the self-diag "U2" trouble.
Section	MFP PWB / PCU PWB / SCU PWB

Operation/Procedure

1) Press [EXECUTE] key.
2) Press [YES] key to execute cancellation of the trouble.

17

17--

Purpose	Clear/Cancel (Trouble etc.)
Function (Purpose)	Used to cancel the self-diag "PF" trouble.
Section	

Operation/Procedure

1) Press [EXECUTE] key.
2) Press [YES] key to execute cancellation of the trouble.

21

21-1

Purpose	Setting
Function (Purpose)	Used to set the maintenance cycle.
Section	

Operation/Procedure

* Do not change the default setting value of the maintenance counter on SIM21-1. The replacement timing of the fusing cleaning roller, the filter and PS paper dust removal cleaner may not clarify.

1) Select a target item of setting with scroll key on the touch panel.
2) Enter the set value with 10-key.
3) Press [OK] key. (The set value is saved.)

Item/Display		Content	Setting range	Default value		
				18cpm machine	20cpm/ 23cpm/ 26cpm/ 31cpm machine	36cpm machine
A	MAINTENANCE COUNTER (TOTAL)	Maintenance counter (Total)	0: Default 1 – 300: 1K – 300K 999: Free	80K	100K	120K
B	MAINTENANCE COUNTER (COLOR)	Maintenance counter (Color)	0: Default 1 – 300: 1K – 300K 999: Free	50K	60K	70K

22

22-1

Purpose	Adjustment/Setting/Operation data output/ Check
Function (Purpose)	Used to check the print count value in each section and each operation mode. (Used to check the maintenance timing.)
Section	

Operation/Procedure

Change the display page with scroll key on the touch panel.

Item	Display	Content	
Total output quantity	TOTAL OUT (BW)	Total output quantity of black and white	All prints including jams
	TOTAL OUT (COL)	Total output quantity of color	All prints including jams
Total use quantity	TOTAL (BW)	Total use quantity of black and white	Effective paper (including self print, excluding jams)
	TOTAL (COL)	Total use quantity of full color	Effective paper (including self print, excluding jams)
	TOTAL (2COL)	Total use quantity of 2-color	Effective paper (including self print, excluding jams)
	TOTAL (3COL)	Total use quantity of 3-color	Effective paper (including self print, excluding jams)
	TOTAL (SGL_COL)	Total use quantity of single color	Effective paper (including self print, excluding jams)
Copy	COPY (BW)	Black and white copy counter	Billing target (excluding self print)
	COPY (COL)	Full color copy counter	Billing target (excluding self print)
	COPY (2COL)	2-color copy counter	Billing target (excluding self print)
	COPY (SGL_COL)	Single color copy counter	Billing target (excluding self print)
Print	PRINT (BW)	Black and white print counter	Billing target (excluding self print)
	PRINT (COL)	Full color print counter	Billing target (excluding self print)
	PRINT (2COL)	2-color print counter	Billing target (excluding self print)
	PRINT (3COL)	3-color print counter	Billing target (excluding self print)
	PRINT (SGL_COL)	Single color print counter	Billing target (excluding self print)
Document filing	DOC FIL (BW)	Black and white document filing print counter	Billing target (excluding self print)
	DOC FIL (COL)	Color document filing print counter	Billing target (excluding self print)
	DOC FIL (2COL)	2-color document filing print counter	Billing target (excluding self print)
	DOC FIL(SGL COL)	Single color document filing print counter	Billing target (excluding self print)
Other	OTHER (BW)	Black and white other counter	Self print quantity
	OTHER (COL)	Color other counter	Self print quantity
PCI	PCI OPE-TIME	PCI counter	PCI accumulated operation time (H)